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# THE IRON AGE

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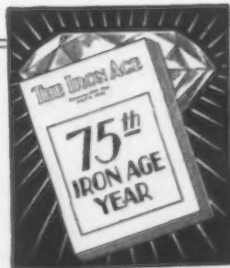
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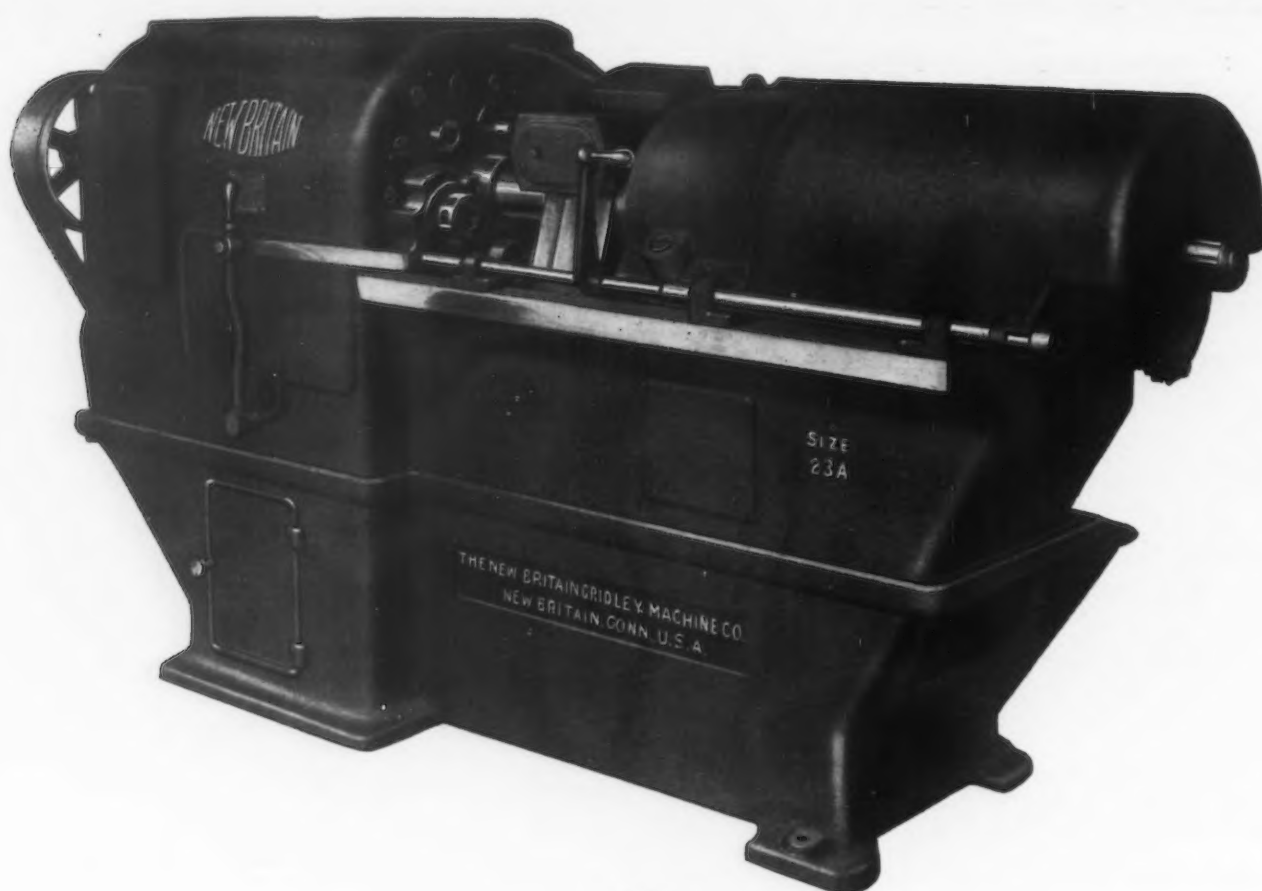
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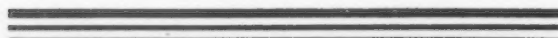
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# THE IRON AGE

New York, August 14, 1930

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## Facing the Facts in Agriculture

By BURNHAM FINNEY

**T**HE American farmer will have from one and a half to two billion dollars less to spend this year than last, a well-known economist estimates.

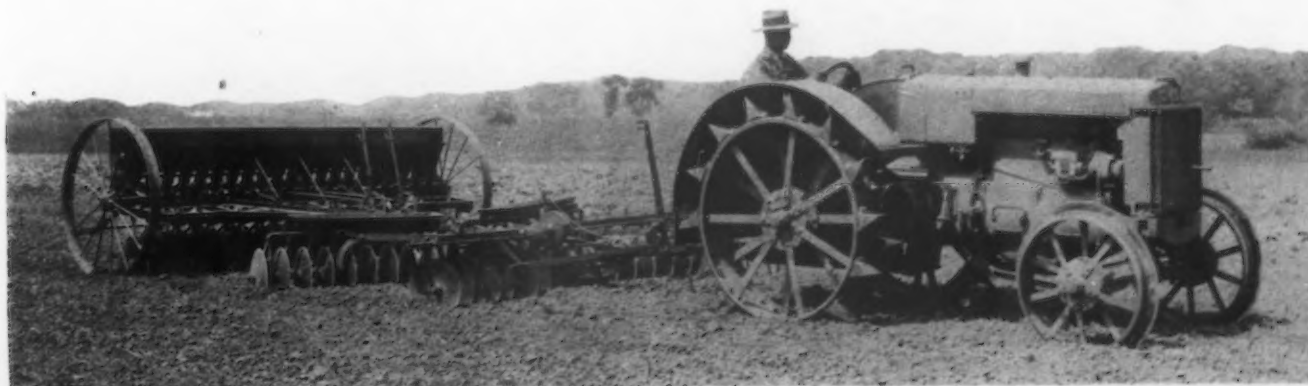
The reduced buying power of agriculture through both drought and low prices is of serious consequence to the entire nation, but of special concern to agricultural implement makers, who depend upon the farmer for the purchase of their goods. In order to get a dependable estimate of what lies ahead for the American farmer and for the agricultural implement industry, THE IRON AGE recently interviewed implement manufacturers. A composite of their views is set forth in the following paragraphs:

There are more than six million farms in the United States. However, just as in retail business, some farms are efficiently operated and yield a satisfactory profit; others are poorly managed and are "in the red." Thus, from the standpoint of the pro-

duction of the bulk of crops from year to year, the six million shrinks to between two and three million.

From the amount of publicity that has been given large farms conducted on a mass production basis, much like that of a modern factory, one might think that efficiency and prosperity are confined to this group; but studies made by disinterested parties, such as agricultural colleges, show that this is not the case. While the farm of Thomas Campbell in Montana, consisting of some 100,000 acres, has been termed a model farm, and, through the use of modern farm equipment, has been an outstanding example of successful farming in this machine age, nevertheless there are numerous large farms which have been disappointments as money makers and a substantial number of small farms which have brought their owners surprisingly satisfactory profits.

In the consideration of successful farming, the





most important factor is not size, but the human element. Intensive cultivation of small tracts of land by skilled farmers has proved just as remunerative proportionately as the development of farms of enormous acreage tilled with the most up-to-date mechanical equipment.

#### Farmers' Buying Power Seriously Impaired

While the census of the United States shows that the movement from farms to cities has not abated, this is not a matter of concern because of the less manpower now required through the development of farm machinery. However, the thing which does weaken the economic and industrial structure of the country is the farmer's loss of buying power resulting from the heavy decline in prices of his products. The rural districts in the United States still contain approximately 40 per cent of the population, and so long as the economic well-being of this large group is impaired, general business cannot hope to return to normal.

Commenting on agriculture, the monthly bulletin of the National City Bank, New York, said in July that "the situation is characterized by favorable crop prospects but unfavorable prices. . . . Low prices for agricultural products unquestionably add to the uncertainty regarding outlook for business this fall."

With farm products bringing low prices, thereby forcing the farmer to purchase less than his usual volume, it is little wonder that implement makers are having difficulty in appraising their 1931 market. There is yet a possibility that farm prices will rebound somewhat and yield higher returns than the outlook in recent weeks has indicated. Moreover, prices of non-agricultural commodities may drop to the point where they will be more in line with incomes from crops. These are speculative matters which now cannot be determined, but which respond only to the

Following is a table comparing prices of principal agricultural products at the close of June this year and a year ago:

	End of June	
	1929	1930
Cotton, July, new, New York (per lb.) . . . . .	18.13c.	13.52c.
Wheat, July, Chicago (per bu.) . . . . .	\$1.11 <sup>3</sup> / <sub>8</sub>	91.75c.
Corn, July, Chicago (per bu.) . . . . .	91.87c.	75.75c.
Oats, July, Chicago (per bu.) . . . . .	43.25c.	35.37c.
Rye, July, Chicago (per bu.) . . . . .	86.50c.	48.12c.
Butter, extra creamery, New York (per lb.) . . . . .	43.50c.	33.00c.
Steers, average of good, Chicago (per lb.) . . . . .	14.32c.	11.29c.
Hogs, heavy, Chicago (per lb.) . . . . .	10.75c.	8.95c.

From monthly letter of National City Bank, New York.

influence of various economic factors.

It is not an exaggeration to say that agricultural implement manufacturers see trouble ahead unless farm conditions materially improve. They are trying to view the

situation with optimism, but so long as the farmer hasn't the money to buy manufactured goods in normal volume, they do not see how there can be a return to prosperity. This statement applies to American industry generally, for the farming population offers a large potential market for automobiles, radios, clothing and a myriad of products in addition to farm implements.

It is for this reason that executives of farm implement companies are not agreed on what to expect the remainder of the year. In some cases they believe that the months ahead will bring only a slight improvement in their business. They are chary about predicting appreciable gains, especially in view of the fact that the depression in agriculture is not confined to this country, but is world wide.

Complicating the situation are the tariff barriers erected by numerous countries against American agricultural goods. The output of farm products in this country has increased greatly since the war, making it necessary to market a constantly growing surplus abroad. The recent action of Congress in placing higher duties on many commodities has had its inevitable reaction of provoking other nations to impose similar restrictions on the importation of American goods. This extends into agricultural as well as manufactured articles.

Insofar as the agricultural implement industry is concerned, it occupies what seems like an enigmatical position. Although American farmers are faced by a staggering aggregate loss of income this year and therefore will be forced to curtail purchases, nevertheless they must turn to machinery to lower their



This tractor with a one-way disk prepares 90 acres a day for seeding



production costs and thereby obtain a relatively larger profit.

On June 15 farm prices were at the lowest level since 1922, states the Bureau of Agricultural Economics of the United States Department of Agriculture. Since that time there has been a further drop in prices which puts the index several points lower. This has brought up the question whether farmers can operate at a profit under present conditions. Especially as to wheat has the assertion been made that recent quotations do not cover the cost of raising crops. How true is this?

#### Efficient Farming Methods Gaining

Students of scientific farming claim that with the use of modern mechanical equipment it is possible to produce wheat at 50c. a bushel. The average farm cannot make such an excellent showing, principally because it is not properly equipped. However, those farmers who have raised crops efficiently and have had the courage and financial resources to invest in production machinery today find themselves in a comparatively strong position. If, in the final analysis, the situation resolves itself into a survival of the fittest, they will be farming successfully when their less adaptable comrades have failed.

Through a gradual process of education on the part of agricultural schools and colleges, agricultural implement makers and agencies engaged in studying agriculture, efficient farming has progressed amazingly during a period when the condition of agriculture was drawing the attention of the entire country and especially of Congress.

SO long as the economic well-being of 40 per cent of the population is impaired, general business cannot hope to return to normal. \* \* \* \*

Just as in industry, success in farming depends on efficient management rather than size. Many small farms are just as profitable proportionately as large ones. \* \* \* \*

Agricultural implement makers see trouble ahead unless farm conditions materially improve. They are chary about predicting appreciable gains, especially in view of the fact that the depression in agriculture is not confined to this country, but is world wide. \* \* \* \*

Various agencies are laboring feverishly to bring relief to the farmer, and by no means the least of remedies is lowered production costs through the use of machinery. \* \* \* \*

Mechanization of the farm is gaining such momentum that it is hard to keep abreast of new developments. \* \* \* \*

The trend toward horseless farms has great significance for the metal-working industries, especially for manufacturers of iron and steel. The newer equipment reveals a definite leaning toward metal as compared with wood. \* \* \* \*

Five years ago there were no horseless farms. Today there are more than a thousand. Each of them formerly had an average of six horses, the care of which required perhaps two hours a day of one man's time, whether they were working or were idle. These horses have been replaced by tractors demanding no attention when not in use and needing only a small

amount of time for oiling and general upkeep during periods of service.

Offhand, the mechanizing of a farm might seem prohibitive in cost. Generally, however, the change from hand labor and horses to machinery is spread over a long enough time so that the expense is not burdensome. Even if a complete change were made overnight, it is estimated that the investment required for an average small farm is about \$2,500 to \$3,000. This amount would provide machinery of sufficient variety and flexibility to take care of the planting and harvesting of crops, as well as the care of live stock.

#### Large Market for Mechanical Equipment

While the farm mechanization movement has gone forward at an amazing rate in the last few years, the saturation point, if such a thing exists, is far distant. There are approximately one million tractors on American farms today, which shows that the potential market has scarcely been penetrated. A market relatively as good, or better, is open in other farm equipment.

The trend toward horseless farms has great significance for the metal-working industries, especially for manufacturers of iron and steel. The newer



A modern potato harrow saves over 50 per cent of the labor cost of picking up potatoes by hand

equipment reveals a definite leaning toward metal as compared with wood. Much of the changing design favoring metal is due, at least in part, to the motorization of the farm. Whereas only 600 tractors were made 20 years ago, 220,000 were manufactured last year. Grain separators, formerly made largely of wood, are now made of sheet metal, and combines, of which 37,000 were turned out in 1929, take a considerable tonnage of steel.

In the past year an all-metal wagon, manure-spreader and hayloader were put on the market for the first time and will be an increasingly important outlet for steel, provided they are adopted by all manufacturers. Other lines of farm equipment requiring an ever larger amount of iron and steel are corn shellers, hay stackers, grain elevators, corn pickers, windmills, dusters and cultivating and weeding at-

row machines now are available and are characterized chiefly by their compactness. Tractor planters for cotton growing are being used. Improved dropping apparatus which drops only six or seven seeds to the hill probably will be standard equipment on large plantations within a few seasons.

Nineteen twenty-nine was a banner year for corn picking machines, of which about 40,000 are in use on American farms. Greater power take-off, lighter weight, more steady operation and less dependence on weather conditions have all followed in the wake of tractor-powered machines.

While tractor power for filling silos is preferred by most farmers, silo fillers have been operated successfully by electric motors mounted on the cutter frame. Either a chain or tex-rope drive with a 5 or 7½-hp. motor is used. Owners of feed mills have



*Two grain drills hooked to a tractor. Combinations like this save time, labor and money in fall seeding*

tachments for tractors. Incidentally, there are seven general purpose tractors being made today as against only two four years ago. This illustrates the fact that implement manufacturers are alive to the possibilities ahead of them in the next five to 10 years.

#### Use of Steel on Farm Increasing

Other evidences of the growing use of metal on the farm are not lacking. Steel stanchions are replacing wood stanchions in dairy barns. Drinking cups are being substituted for the old wooden tanks. In the sheet metal industry there is a demand for poultry houses and equipment, grain storage bins, ventilators and other articles.

Mechanization of the farm is gaining such momentum that it is hard to keep abreast of new developments. More new tractor models appeared last year than in any year since the war, with a trend toward dependable, long-lived machines possessing more power in the field and on the belt and having as little excess weight as possible. Among the new ideas in the 1930 tractor are rubber-tired wheels for road hauling, a power lift for raising plows or cultivators while the outfit is stationary, and additional forward speeds for faster operation on the highways. Further standardization and application of the power take-off have been made. Sprayers, binders, corn pickers, plows and mowers are tools to which this principle has been extended.

Tillage machinery has undergone much development, particularly in the way of equipment for tractor use. Tractor engineers feel that they have got the "bugs" out of planting equipment; three and four

found that elevating fans are advantageous to blow grain, such as oats, into bins at a fairly rapid rate. Power ventilation is of special interest to those who are thinking in terms of barn construction. Electrically-driven force ventilators are used for both intake and outlet, eliminating an expensive air-piping system.

#### Machinery Reducing Farm Labor Costs

A study of corn picking costs conducted by the College of Agriculture of the University of Illinois illustrates the lower expenses resulting from employing machinery instead of hand labor. In 1928 and 1929 the average bushel cost of picking corn with one-row outfits, on 102 farms, was 8.3c. With two-row pickers, on 64 farms, this figure was lowered to 6.6c. Detailed cost records collected on 12,000 acres of hand-husked corn showed a cost of 10.4c. a bushel. All mechanical pickers studied were of the power take-off type.

Hand husking was found to take 5.1 hr. of man labor an acre, as compared with 2.7 hr. for one-row and 2.2 hr. for two-row pickers. One-row machines cost 72c. and two-row machines 60c. an acre for repairs, interest on investment, depreciation and shelter. Depreciation was based on a life duty of 950 acres and 1400 acres for one- and two-row machines respectively.

Corresponding savings are being made with other kinds of farm machinery, so it is not surprising that the trend toward mechanization has progressed steadily despite widespread agricultural depression over a comparatively long period. Various agencies are



laboring feverishly to bring relief to the farmer, and by no means the least of the remedies is lowered production costs through the use of machinery. Agriculture, the same as industry, is dependent upon good and far-seeing management for success and upon this fundamental more than upon artificial stimulants rests the difference between profit and loss.

#### Some Encouragement Expected

Although implement manufacturers confess that the outlook at the moment is rather foreboding, they believe that the course of events in the next few months will bring some encouragement. Tight and scarce money in the rural districts and low prices for farm products are two of the most disturbing

factors. As one authority points out, however, sound economic practices usually find some method of financing themselves.

The attempt to establish production schedules on agricultural implements which will conform within reason to the consumer demand has at best been termed a year's gamble ahead. This is not the first time that the implement industry has been faced with the task of gaging its market during a period when unfavorable factors seem to overbalance the favorable. It is safe to say, however, that the industry intends to move conservatively, cognizant of the economic troubles facing the farmer, but confident that he will go far toward solving his problem by increasing the use of mechanical equipment in producing his crops.

## Drought Defers Recovery

An Exclusive Statement to THE IRON AGE by Col. Leonard P. Ayres

**A**N unpredictable, and what may prove an important, factor in retarding the expected recovery in business activity during the months ahead is the drought spreading over the corn belt," according to Col. Leonard P. Ayres, vice-president of the Cleveland Trust Co., Cleveland, in an exclusive statement to THE IRON AGE.

"We have had many droughts in this country during the years past," he said, "but probably none within the past half century of the proportions of the one being experienced at present.

#### May Check Sales of Lighter Automobiles

"Certain very direct and serious consequences would attend anything approaching a crop failure. A substantial proportion of the lighter automobiles are sold in rural districts and an impaired purchasing power of those areas would definitely restrict the automobile production for the remaining months of the year. So far this year it has been the production of these lighter cars which has given the automobile industry such vigor as it has possessed. With a shrinkage in the outlets for this output, total production would be sharply restricted. Literally millions of wage earners are either directly or indirectly dependent upon the automobile industry, and a return to relatively small schedules of production in that industry would definitely impair the purchasing power of our industrial population.

#### Little Effect on Railroads Likely

"So far as the railroads are concerned failure of the corn crop would not be seriously felt immediately.

Perhaps 85 per cent of the corn produced in this country is fed to livestock and therefore is consumed within a comparatively short radius of where it is raised. This leaves only a small percentage to be shipped to market, most of which goes to nearby consuming centers. As a matter of fact, a corn crop failure might increase car loadings somewhat, because farmers without corn probably would ship a more than normal quantity of their livestock to market.

"A second factor which is assuming increasingly grave significance in the business prospect is the continued decline in commodity prices. Already this decline has approximated the most severe and swift recession recorded in peace-time in this country, and it is unlikely that normal business activity can be restored until these prices have been stabilized. Three causes have contributed to this decline, but all of them have about run their course.

"In the first place, 1928 and 1929 were years of extraordinarily high interest rates brought about by the hungry stock market which attracted funds from all over the world and thus created world-wide stringencies in money markets. This state of affairs always impairs international financing and exercises a restrictive influence upon international trade and commodity prices. This condition, however, has been definitely reversed and a world-wide ease in money conditions now exists.

"A second factor in the price decline has been the almost simultaneous capitulation to economic laws of the various schemes for maintaining prices. The

(Concluded on page 447)

**DR. AYRES** looks for reduced sales of automobiles to the communities affected by the prolonged and wide-spread dry weather, but in spite of the drought believes that general business for the next few months will swing with the swelling seasonal tide.





# Refrigerated Drinking Water for Plant Personnel

By L. M. JORDAN

**M**ORE consideration and attention are being given the living and working conditions of industrial workers today than ever before. Healthier, more energetic and efficient employees insure increased production both in quality and quantity—a direct benefit to the company—and good-will between management and workmen. The employer who takes the working conditions of his plant into consideration not only realizes greater over-all efficiency from his establishment, but is able to attract and hold the better classes of employees.

Aside from proper ventilation of buildings, comfortable working conditions and modern equipment for handling and processing materials, the problem of supplying proper drinking water—a factor so easily overlooked—is one of the most important in bringing about satisfactory working conditions. Particularly is this true in metal-working plants where the workmen are subjected to high temperatures from furnaces.

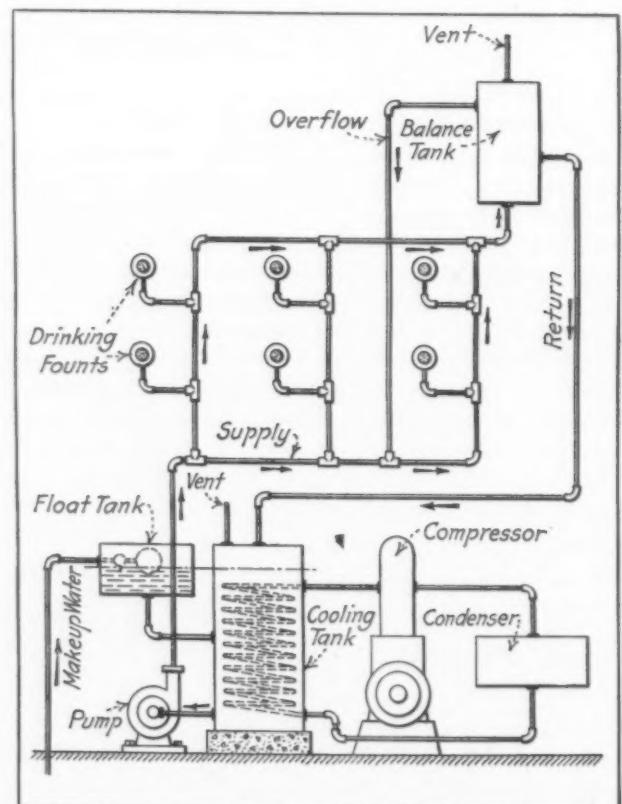
By proper drinking water, the writer means pure water, free from disease-creating bacteria, properly clarified and deodorized and supplied at a palatable, refreshing temperature at points that minimize drudgery and time wastage in taking drinks. One way to accomplish this is by installing a modern refrigerated drinking water system such as is shown in the accompanying illustrations.

These systems are most economically adaptable to establishments embracing a considerable number of persons, such as large hotels, office buildings and industrial plants, but are worthy of consideration for supplying comparatively small numbers of persons. They represent no new departures from ordinary refrigerating equipment of the type used in connection

with cold storage rooms, markets, etc., but rather a comparatively new application of refrigeration.

## Cost of Old and New Systems Compared

The cost of installing one of these systems appears



General Scheme of the Open System of Water Distribution

▲ ▲ ▲

**M**ORE and more are executives and plant managers giving attention to the health and comfort of their employees. This is being done not only because it is humane to do so but because it means a more efficient and contented workman. Such conditions are of general advantage to the organization.

¶ In metal-working plants where high temperature conditions prevail, often throughout the year, the water supply for drinking purposes is of prime importance. Some suggestions are offered in this article.

▼ ▼ ▼



One Type of Drinking Fountain Is the Pedestal

uneconomical on the surface, but cases are in hand in which actual savings of as high as 39 per cent have been effected by their use in industrial plants. In a certain metal-working plant in the North, 1400 operatives were employed. These workmen were formerly served ice water from five ice tanks located about the plant at a cost of \$2,000, or \$1.43 per capita, per annum. A modern refrigerated drinking water system was installed, reducing this cost to \$1,395, or approximately \$1 per person, a total saving of \$671.50, or 32 per cent. This cost, spread over a

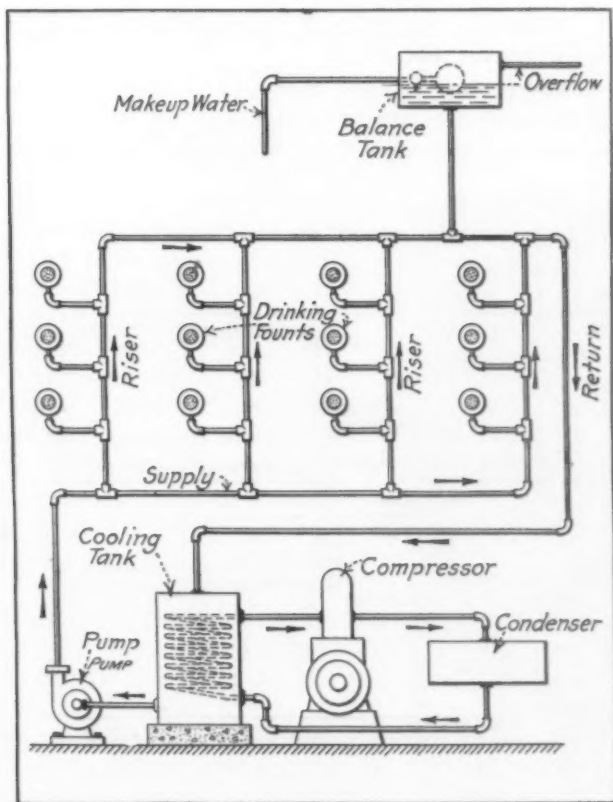
period of 20 yr. of the life of the system, is shown in the table, as well as the cost of operating the ice tanks before the new systems were installed, over an equivalent period.

The fact should also be borne in mind that considerable savings, other than that represented by actual capital expenditures, are effected in time saved by the employees, whose health is promoted by the drinking of sufficient quantities of water. A number of diseases are directly traceable to a deficiency of water in the body. There is also danger of cramps and other ill effects when the overheated body is fed ice water.

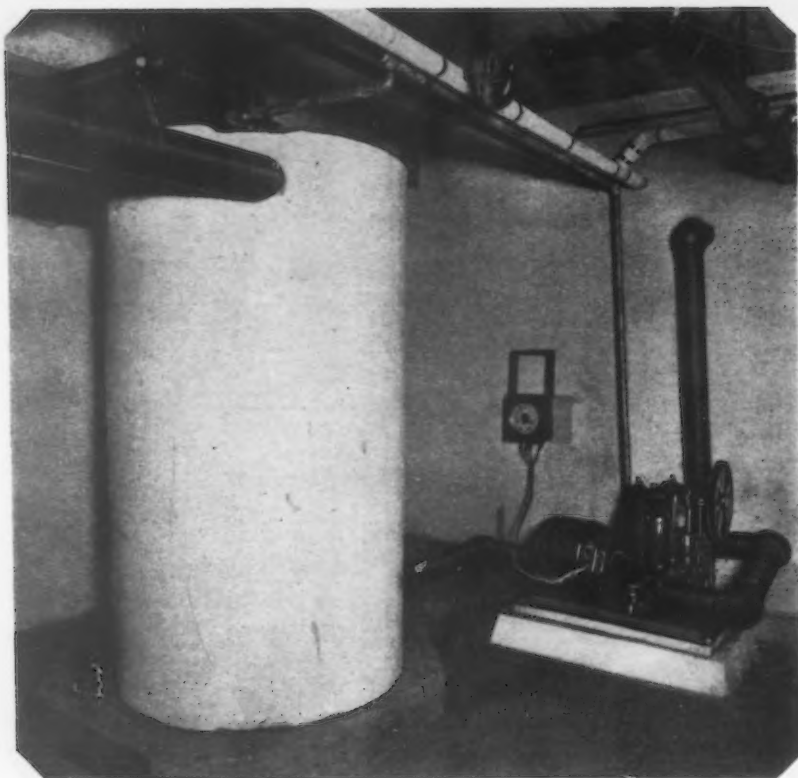
#### Two Types of Refrigerating Systems

There are two types of refrigerating systems in use, commonly referred to as the "open system" and the "closed system." The open system is shown in one illustration and the closed system in another. While the general construction of the two systems is closely identical, the details of operation vary. These are the two systems commonly employed in tall buildings, such as offices and hotels, but the principle of operation can be gleaned from a study of these. If the building to be served consists of only one story, the open system is the only one applicable. The principal difference between the two types is in the cost of pumping the water through the distributing pipes.

Essential parts of either system are: The refrigerant compressor and its condenser; a cooling tank for the water; the circulating pump; the necessary distributing piping; and the "bubblers" or drinking fountains. A moderate-sized compressor or refrigerating machine will serve several hundred persons, is easily installed and occupies little space. The circulating pump may be either the multi-cylinder, plunger type or the centrifugal type, but should be of a type that will maintain a constant, non-pulsating flow through the lines. The cooling tank for the open system may be of an inexpensive type, since it need not be heavily constructed, being open to atmospheric



Plan of the Closed System for Distributing Drinking Water



*Cooling Tanks and Circulating Pumps of One of the Systems*

pressure, while for the closed system it must be of sufficient tensile strength to withstand the static head of the water in the risers, and must be provided with a water-tight cover. The greater the elevation of the highest point of the risers, the stronger must this tank be.

The cooling tank in either system contains the "expansion coil" of the refrigerating machine. The make-up water is cooled to the desired temperature in this tank, from whence it is circulated throughout the distributing circuits or "loops" by the circulating pump. In the case of the open system, the water supply is maintained in the circuit by a float tank, shown in the drawing, which is located at the approximate elevation of the top of the cooling tank. When water is drawn from the system, the level in the cooling tank represented by the horizontal, dotted line falls, also that in the float tank, allowing the float to drop, which opens a valve and admits more make-up water to replace that drawn off. The pressure required to develop a liberal jet at the bubblers or drinking fountains is developed by the pump forcing the water through the balance tank shown above the high point of the layout.

#### **Closed System Described**

The closed system is the most economical to operate, due to the advantage of the counterbalance of the water in the risers. In this case no effort is required of the circulating pump other

than to overcome the friction of the pipes, there being no lift required, hence the saving in cost of pumping, whereas, in the case of the open system, the pump is constantly required to lift the water to the highest fixture.

In the closed system the make-up water is admitted to the circuit by a balance tank located above the high point of the circuit, as shown, and operates in the same manner as the float tank in the open system. Necessary pressure for a free jet at the fountains in this case is had from the gravity of the water in the risers, and this balance or feeding tank should be located several feet higher than the highest fountain, to insure a liberal flow at the highest fountains.

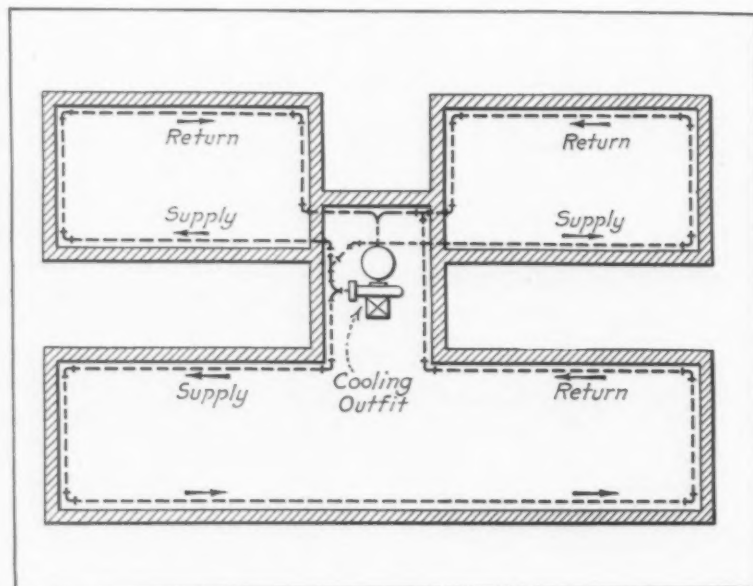
In planning the installation of one of these systems there are a number of factors that will affect its operation, chief among which are: Type of building, the average temperature of the atmosphere, the average temperature of the make-up water, the number of persons to be served, and the type of their employment. It is

obvious that office workers and clerks will not consume as much water as laborers, especially when the latter are exposed to high temperatures, as in a heat-treating plant in the summer seasons.

#### **Water Consumed by Industrial Workers**

Industrial workers will consume up to 1 qt. of water per hr. and higher.

Where there is more than one building in an establishment, or several departments, it is the best practice to locate the refrigerating plant centrally and



*General Plan Showing Location of Refrigerating Machinery in the Central Part of the Plant*



employ a separate circuit to serve each building or department, as suggested in one of the drawings. This is recommended because of the heavy line losses where extremely long lines are employed. The matter of insulating the cold lines of the systems is a very important one, but, however well insulated they are, they will absorb a certain amount of heat from the atmosphere, and if the distributing lines are of considerable length, the water drawn from the fountains nearest the refrigerating plant on the return side of the loop will be considerably heated and unpalatable.

Distributing lines may be laid either above or under ground. If not exposed to the action of weather, as where they pass along the interior of a building, no protection is necessary other than the heat insulating material, but if they pass through exposed space, the insulating material should have a coat of roofing applied in a manner that it will shed all rain water from the insulation as a precaution against decay to the latter. Also, if these lines are so exposed, they should be protected from the rays of the sun, which only add to the line losses and increase the load on the refrigerating equipment. Where they are laid underground, they should be laid in well-drained concrete tunnels with proper provision made for inspection and repairs.

In installing these lines, care should be taken to eliminate as much as possible all sharp bends, for it is here that friction of the water in the pipes is considerably increased, often above that imagined, which adds to the pumping load and hence the operating cost. Where the fountains cannot be attached in close proximity to the distributing mains, it is advisable, although increasing the bends in the line, to form a loop in the line which will bring the "live" water as near as possible to the orifices of the fountain, reducing the time consumed in taking drinks in waiting for the water to "run cool." It is obvious that if several inches of dead end exist between the distributing main and the fountain valve, the drinker must wait for this dead, hot

## TABLE OF COMPARATIVE COSTS

### Refrigeration:

Depreciation .....	\$ 500.00
Average interest at 6 per cent, allowing for that earned by depreciation reserve .....	315.00
Repairs and maintenance .....	200.00
Ammonia and oil .....	50.00
Power .....	330.00
Total annual operating cost .....	\$1,395.00

### Ice Tanks:

Depreciation on the five tanks .....	\$ 50.00
Average interest at 6 per cent, allowing for that earned by depreciation reserve .....	16.50
Ice .....	1,500.00
Labor .....	450.00
Repairs .....	50.00
Total cost of old system .....	\$2,066.50

water to run out before the cool water issues.

### Types of Fountains Available

The type of drinking fountain to be used is a matter of choice, there being a number of types available. Perhaps the most suitable style for the workers in the plant is the pedestal type, shown in one of the illustrations. This

type can be centrally located in a department or room and approached from any angle. For the clerical department, executive office, etc., the wall type, as illustrated, is recommended and most frequently used. The pedestal type is more suitable for attaching to underground distributing lines and should have a positive foundation, as of concrete, to support it. A simple, inexpensive type of fountain can be constructed locally for use of the employees in the manner reproduced in one of the illustrations, which is a "home-made" fountain photographed by the writer in a large industrial plant in the South.

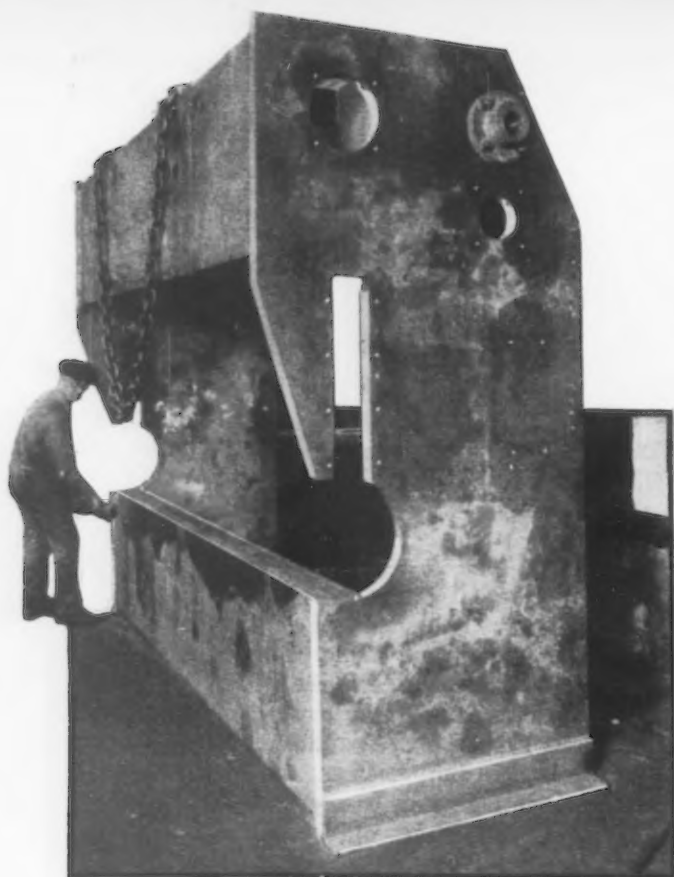
### How to Make an Inexpensive Fountain

To make this type, a large liquid funnel, with several ordinary pipe fittings, is required. The tip of the funnel is inserted into the end of a section of 2-in. piping and soldered in position. This pipe is attached to the sewer, to carry off the waste water. The supply line rises from under the funnel, passes through a hole made through the side of its flare to the inside, where two short nipples, two ell unions and a gate valve are assembled in a manner to place the last ell union centrally over the waste pipe, in an upturned position. The funnel serves as a receptacle to carry off the waste. The cooling tank and circulating pumps of one of these systems is reproduced.

The writer will not here attempt to elaborate on the technical details of calculating the size and capacity of equipment for an installation, since there is such a diversity of factors affecting this phase of any installation that the matter should be left to the engineers of the refrigerating company bidding on the contract. There should be no difficulties, however, in adjusting all details.



*An Inexpensive Fountain Which Can Be Constructed Locally*



# Automatic Shape-Cutting for Machine Parts

By R. W. BOGGS\*

**O**XY-ACETYLENE cutting machines have been long used in steel mills and warehouses for cutting steel billets and slabs to dimension, and in structural shops for making unusual cuts on plates and shapes. It is convenient; a simple tool replaces powerful shears and coping machines. While such oxy-acetylene shape-cutting is by no means a new process, its fast increasing use is due largely to recent perfection in the machine which insures an accuracy in cutting that was hitherto unknown. Furthermore, the increasing use of welded steel construction in place of castings has given the process added impetus.

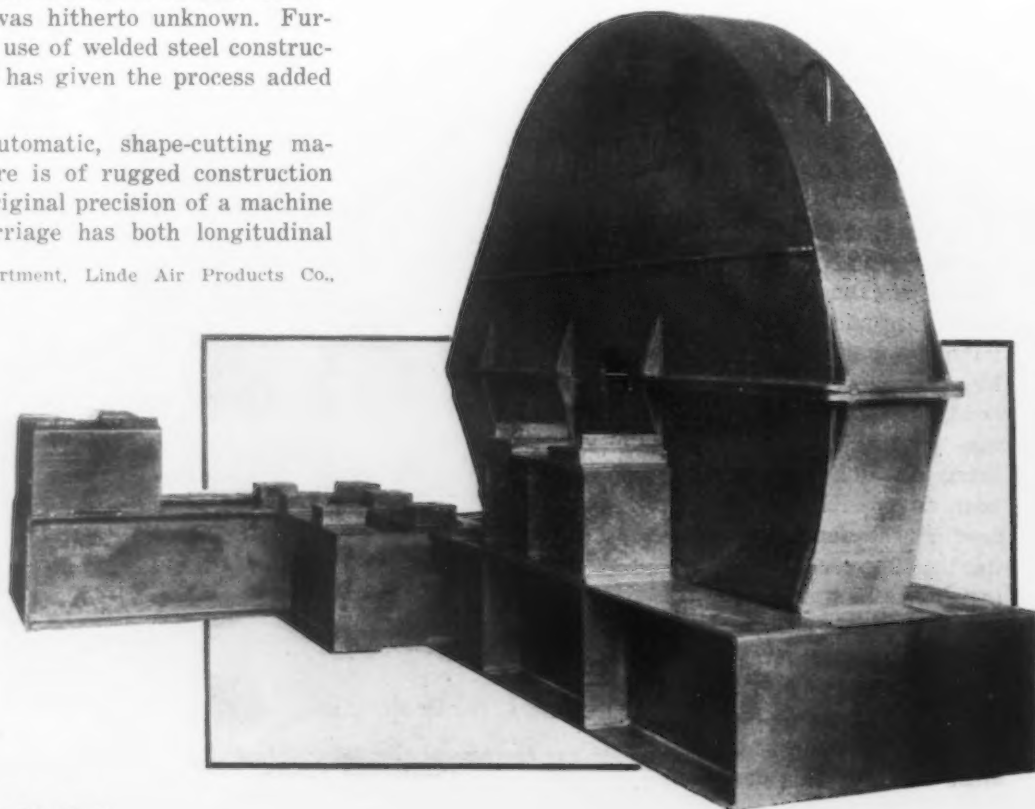
The motor-driven, automatic, shape-cutting machine shown in the figure is of rugged construction and thus maintains its original precision of a machine tool. The compound carriage has both longitudinal

and transverse movements, and is so balanced and constructed that a few ounces of pull moves the blow-pipe along any desired cutting line. When many identical pieces are to be cut, templets are used to direct the cutting flame. This saves the time necessary to lay out each piece, increases the speed of production, insures all pieces being of exactly the same dimen-

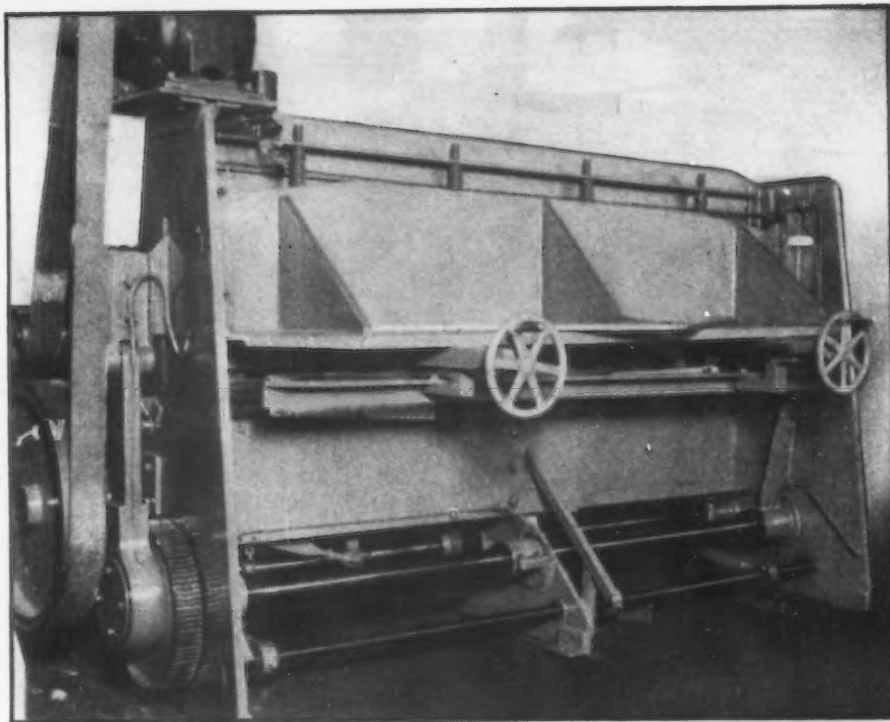
\*Technical Publicity Department, Linde Air Products Co., New York.

*SLABS Up to Four Inches Thick are Used in Making the Frame of This Shear. Tough rolled steel absorbs the principal stresses in machines made by cutting and welding, and these are practically unbreakable (above)*

*Motor Base and Gear Cover Utilizes H-beams, Slabs and Plate. Fabricated by cutting and welding*



sions, and cuts surfaces of the smoothest contour. One of these templets is shown in the view, standing on edge behind the cutting blowpipe. It is made from aluminum strips (which are easily bent to any shape), riveted to a sheet-iron base. In use it is placed on the table underneath the machine, and a pair of knurled knobs, motor driven, creep along the aluminum strip at uniform speed, causing the blowpipe to execute a parallel motion. After the operator starts the machine, the action is automatic to the conclusion of the cut. Cuts are so smooth and accurate that, for many purposes, no further machining is required after the thin scale is brushed off.



*Shear of Moderate Size Exhibits Neat Lines, Yet Has Every Evidence of Surplus Strength*

Of the many uses to which the automatic shape-cutting machine is being extensively applied, the most important is for fabricating machine bases and frames. Many manufacturers have found such construction extremely advantageous in regular production; it has proved particularly valuable to those called upon to turn out machines of a given type in single units or in limited numbers.

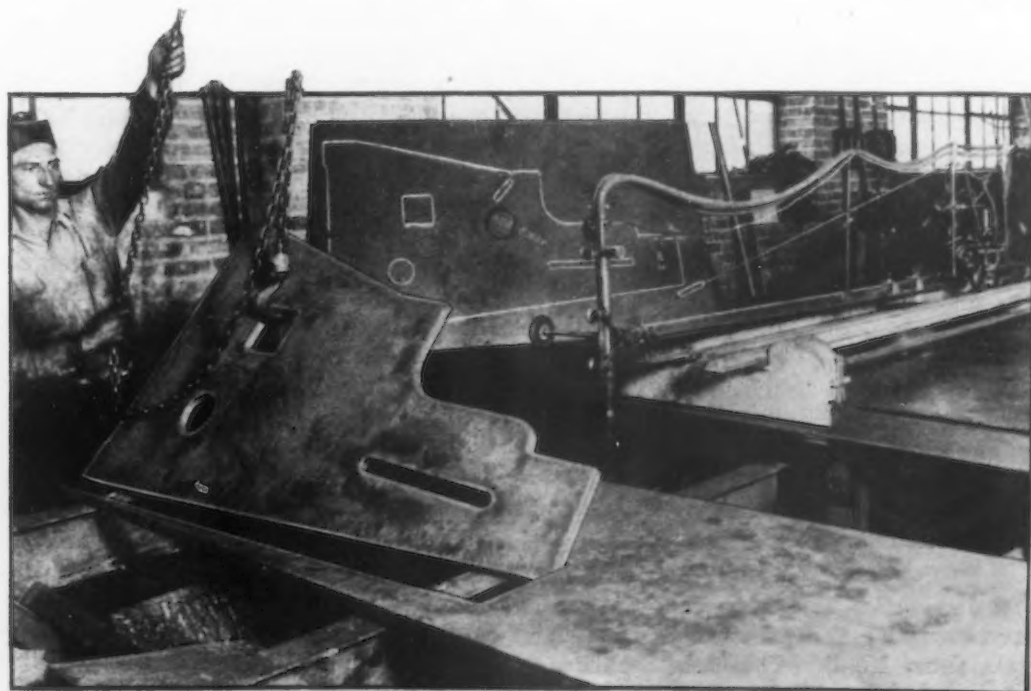
In the figure, a thick steel plate has been cut to shape by templet, and the cut piece is being lifted from the machine. Another half-tone shows a completed frame for a large forming press and another a steel power squaring shears complete. Both of these consist mostly of welded plates. The gear case and base plate, shown in the remaining illustration, makes

more liberal use of heavy I-beams and H-beams, with plates and slabs.

The thickness of the metal used for such heavy work averages above 3 in.; some of the plate is 6 in. thick. Waste of steel stock is minimized by using trimmings from a large piece for smaller units, such as bearing pads, which are necessary parts of the fabrication.

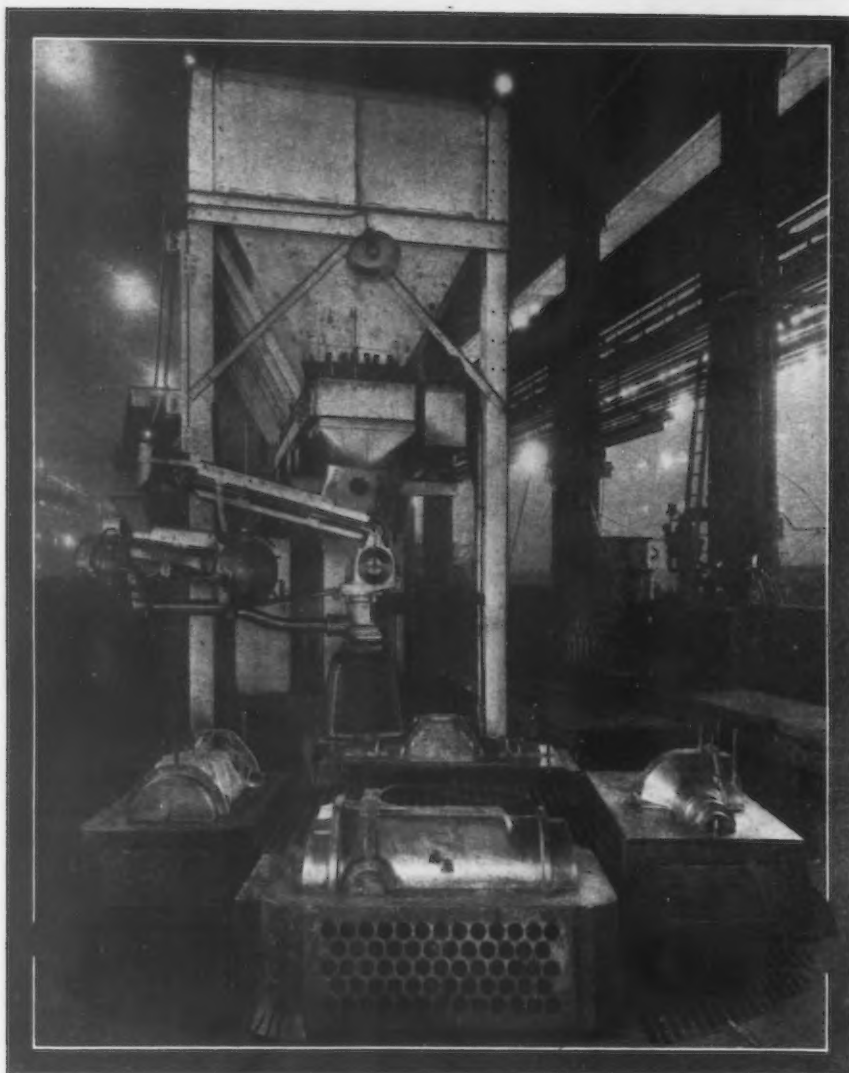
If steels having a carbon content higher than 0.25 per cent, or a definite content of alloy, are to be cut with the flame, they should be preheated slightly before cutting and normalized afterward. If this be done, no difficulty is experienced in cutting even the

*(Concluded on page 446)*



**WORKMAN** Is Removing a Rather Complicated Shape Cut from a Thick Steel Plate. Template used has been taken from underneath the cutting machine at the right and stood on edge to indicate its method of construction—aluminum strip attached to a sheet of steel





# Apparatus Saves Foundry Labor

By J. B. NEALEY

*American Gas Association,  
New York*

**T**URNTABLE With Patterns for Continuous Molding Unit Operating With Sandslinger (in Background). The continuous mold and flask conveyor makes a loop, in which this equipment is centered

**B**RINGING the variables under closer and closer control is an ever-present problem in foundry technique. New ideas and equipment are being constantly devised with this purpose in view and put into use. This modernization of foundry practice has been carried on intensively at the two foundries of the Allis-Chalmers Mfg. Co., Milwaukee.

This company manufactures gas engines, steam engines, steam turbines, steam condensers, air and gas compressors, tractors, mining machinery, rock-crushing machinery, cement-making machinery, electric motors, generators, transformers and switchgear, hydraulic turbines, pumps, flour and sawmill machinery, power-transmission machinery, wood-preserving machinery, etc., as well as a large variety of specialty work. The heavy castings are made in No. 1 foundry, where gas engine castings often require as high as 125 tons of molten metal at a single pouring.

This foundry is 994 ft. long and 221 ft. wide, divided into three bays, served with 20 overhead traveling cranes, all running the entire length. The flask yard adjacent is 3640 ft. long and has 3560 ft. of crane

service. The entire plant, including foundry, flask yard, etc., is equipped with standard-gage tracks, with locomotives and industrial trains.

Metal for the foundry is produced in six cupolas, three on the east side and three on the west. One of these is for chilled or hard iron, which is cast in iron molds, shaped for crusher heads ranging from 5 to 20 tons each. More than 4000 net tons of metal can be poured monthly, in this foundry, while No. 2 foundry has capacity for 2500 tons. All pouring is direct from cupola to flask, with the crane service, and ladles running from 1½ to 30 tons are used. Hand, machine, pit and loam molding are all employed.

## Continuous Molding of Tractor Parts

Centrally located is a continuous molding unit for tractor parts. The various operations are centered in and about a continuous traveling conveyor, laid in the form of a loop 130 ft. long and 40 ft. wide. Inside are located a sand conditioner, shakeout, stationary Sandslinger and turntable for making up the flasks, in the order named. A noticeable thing about this unit is

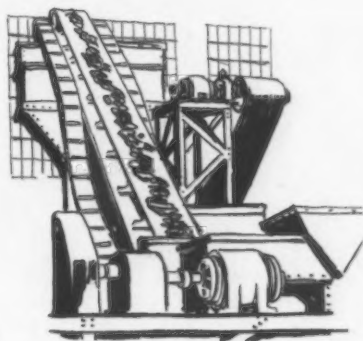
the absence of smoke and dirt in the air.

Flasks from the shakeout are put on to a roller conveyor, which takes them, by gravity, to the turntable, to which they are transferred as needed. This turntable is equipped with patterns for two copes and two drags. One half of the flask is rammed up with the Sandslinger, transferred to the loop conveyor, the core placed with a swing-post crane and the other half rammed up and placed on top. The conveyor carries it along to the pouring station opposite the cupolas, where the metal is poured.

Poured flasks travel around the loop to the shakeout station, nearly opposite the pouring station. The flasks are set on a vibrating shakeout over a grid-covered pipe, through which all sand and smoke are sucked into a separator, outside the building. Here all the dust, smoke and foul air are removed and the sand is dropped on to a traveling belt conveyor. This conveyor runs under the floor back to the molding unit, where it meets an elevator conveyor which takes the sand up into the riddle and then into a sand muller.

On the way up the sand passes under a magnet, which removes any tramp iron and nails used in the molds. The sand is dropped into a muller from measuring hoppers, where new sand or binder is added; from the muller the sand drops on to an inclined belt, which passes it to a Sandarator mounted on top of a 40-ton storage tank. The aerator fills the tank level and aerates the sand. The 40-ton storage tank serves as a feeder for the Sandslinger. One outstand-

**B**OTH continuous molding and pit molding are employed in the Allis-Chalmers foundry in conjunction with the use of Sandslingers. This article tells how the equipment works in together, in the two dissimilar functions, to produce the desired results



ing feature of this installation is that there are no elevators.

As the table revolves under the Sandslinger head, the molds are rammed. This molding unit will produce 120 castings a day with the labor of nine men.

In the center bay is a 450-ft. track on which operates a locomotive type Sandslinger with a 27-ft. arm for the propeller head. This is the largest Sandslinger of its type and was specially constructed for the company. On both sides of the tracks are rows of pits for pit molding, some as large as 14 x 42 ft. x 10 ft. deep. Others are 15 x 40 ft. x 12 ft. deep, while the smallest is 12 x 20 ft.

This Sandslinger is used also in ramming up large molds 12 x 20 ft. x 7 ft. high. After the molds are shaken out the sand is placed between the Sandslinger tracks by means of grab bucket, and the

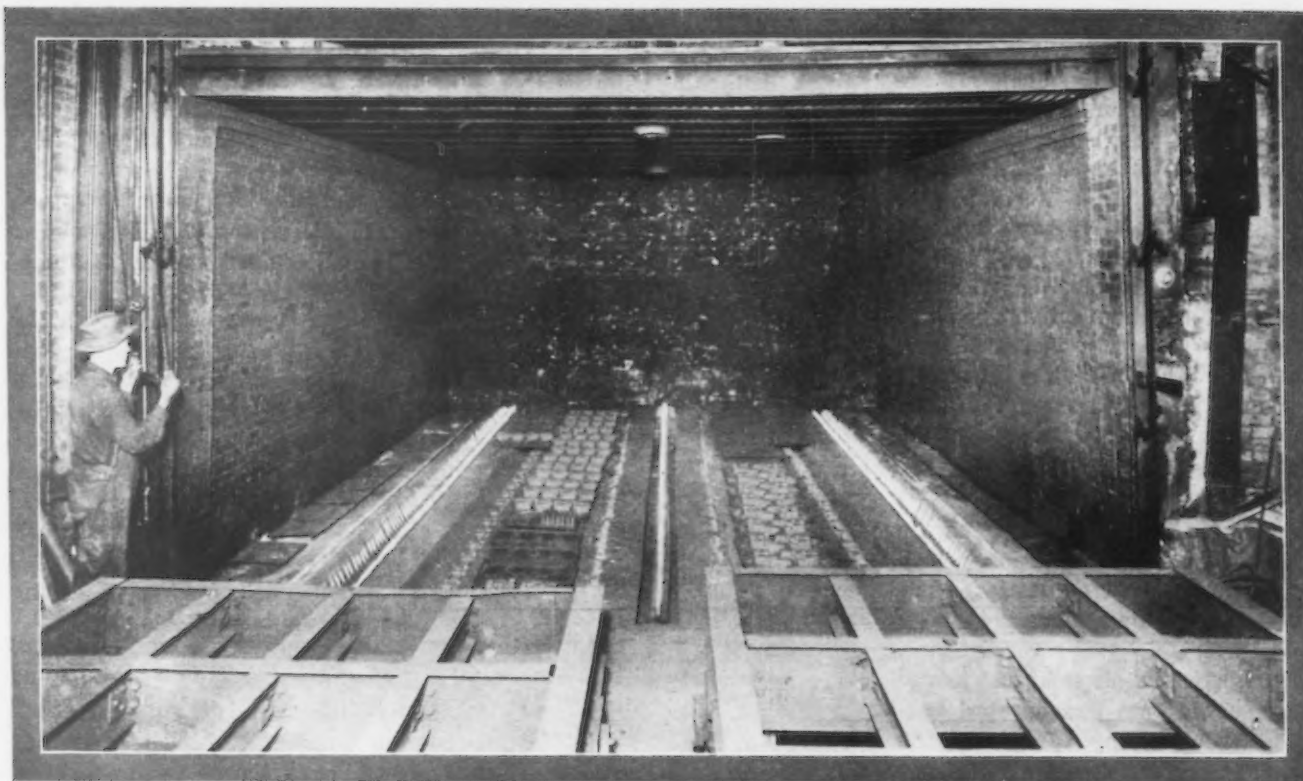
Sandslinger prepares the sand for re-use by wetting and riddling. The sand is then elevated and dropped into the Sandslinger hopper feeding the propeller head.

Another track, parallel and located in the east bay, carries two locomotive Sandslingers of the same type but smaller, one of which has a 12-ft. ramming arm. The ramming is done on flask molds and the flasks are shaken out between the tracks, the sand to be re-used by the Sandslinger.

A loam-molding section in the south end of the center bay is served by two sand conditioners in a gallery in the adjacent west bay, and over the sand-molding department. Large molds and cores are built up to pattern with sweep boards on immense cast iron

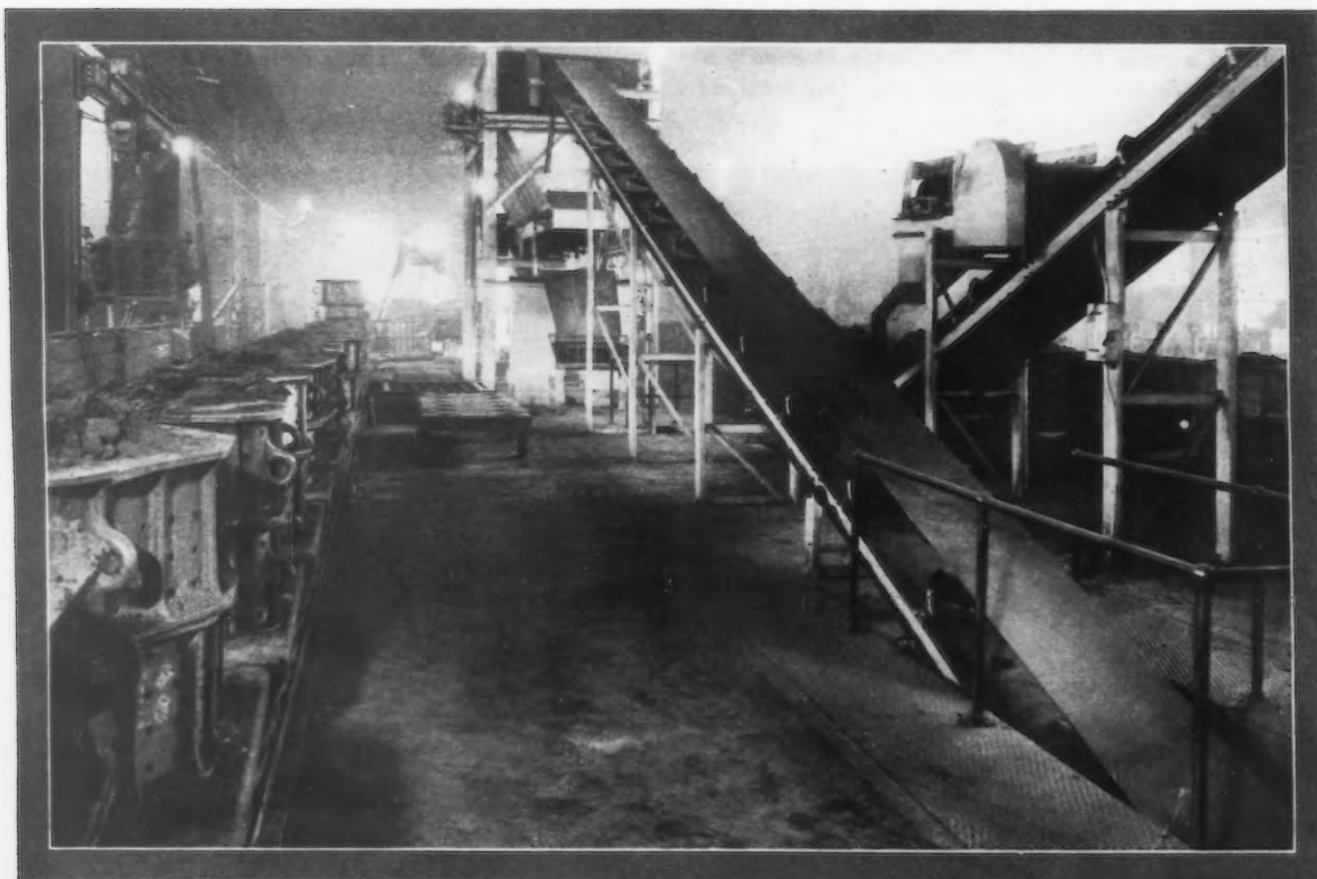


Locomotive Sandslinger at Work on Pit Mold. This machine, with 27-ft. arm for the impeller head, is ramming up the mold in the pit



SAND-HANDLING Equipment (Below) Has a Magnetic Pulley (Upper Right) to Remove Nails, Gagers and Tramp Iron. Belt in center is elevating sand to Sandarator and hopper over Sandslinger. Behind it, the other belt is taking sand from shake-out and separators to sand muller

Core Oven, 18 x 30 Ft., 10 Ft. High, with Three Gas Burners (Above). In foreground are two of the cars for carrying the cores during baking





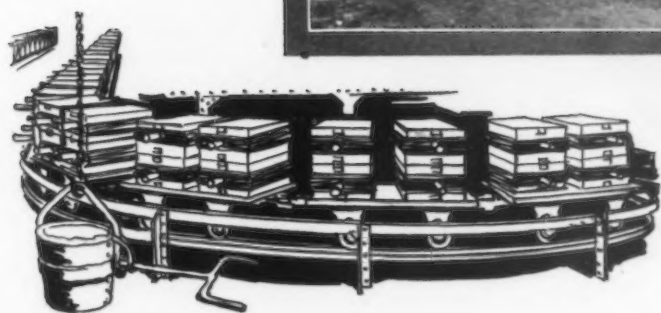
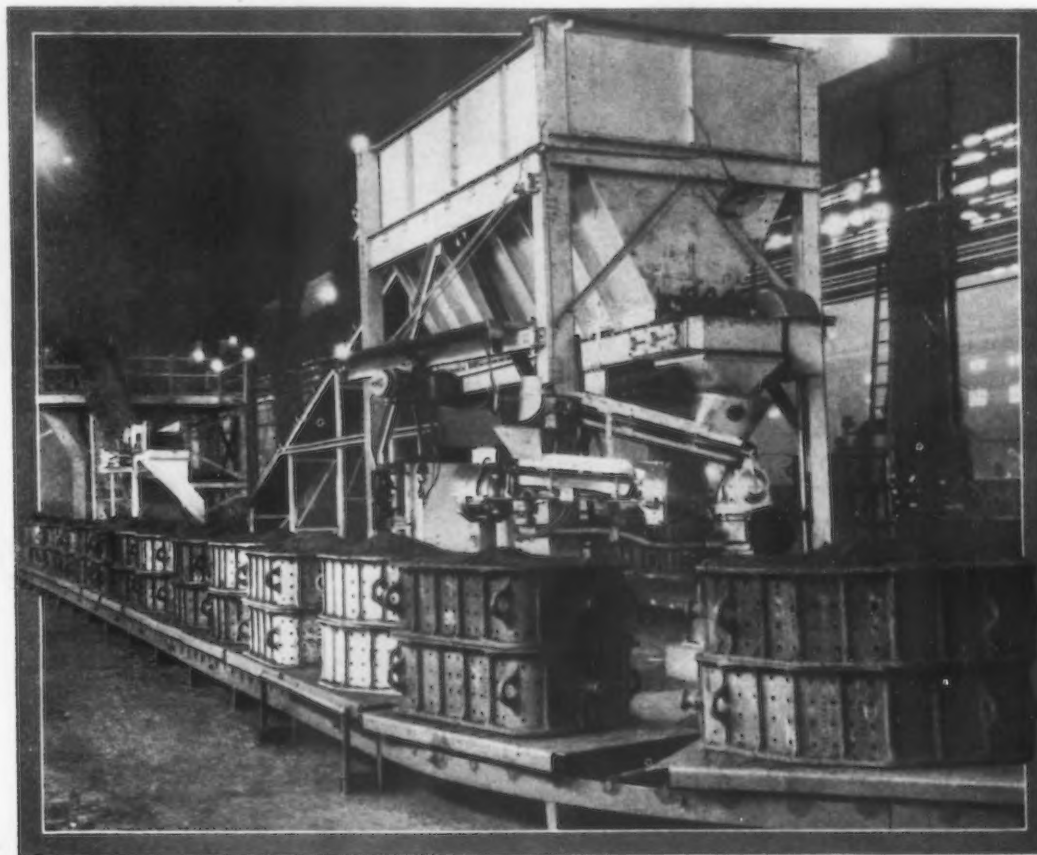
bases, the wooden pattern being first set up and a brick wall built to conform to the job. The face of the mold or core is then surfaced with loam or made of molding sand.

A bug or cast iron ring is now lowered and placed in position around the cast iron base, and another

losses must be avoided. In dimension it is 30 ft. long, 18 ft. wide and 10 ft. high, and is heated with three 4-in. pipe burners, one extending along each 30-ft. wall and one in the center of the oven, near the floor.

Firing is by means of a two-pipe system, using air at approximately 1-lb. pressure. The side burners

**COMPLETED**  
Molds Leaving  
Molding Unit To-  
ward Pouring Station.  
Aprons on conveyor  
platforms protect the  
rollers from spilled  
iron



brick shell is built up on this, and outside the first shell, to conform to the outer part of the pattern. When finished the outer bug and shell are raised and placed on the floor close by, to be loam surfaced on the inside. The two parts of the mold are then blackened and placed in large core ovens, fired with gas, to be baked like cores. After they are baked they are put together ready for pouring.

Molds for cylindrical parts are made up of brick on round bases, the pattern being attached to a spindle at the center and swung around by the molder to maintain the exact contour, as he builds up the structure.

#### Insulated Core Ovens Employed

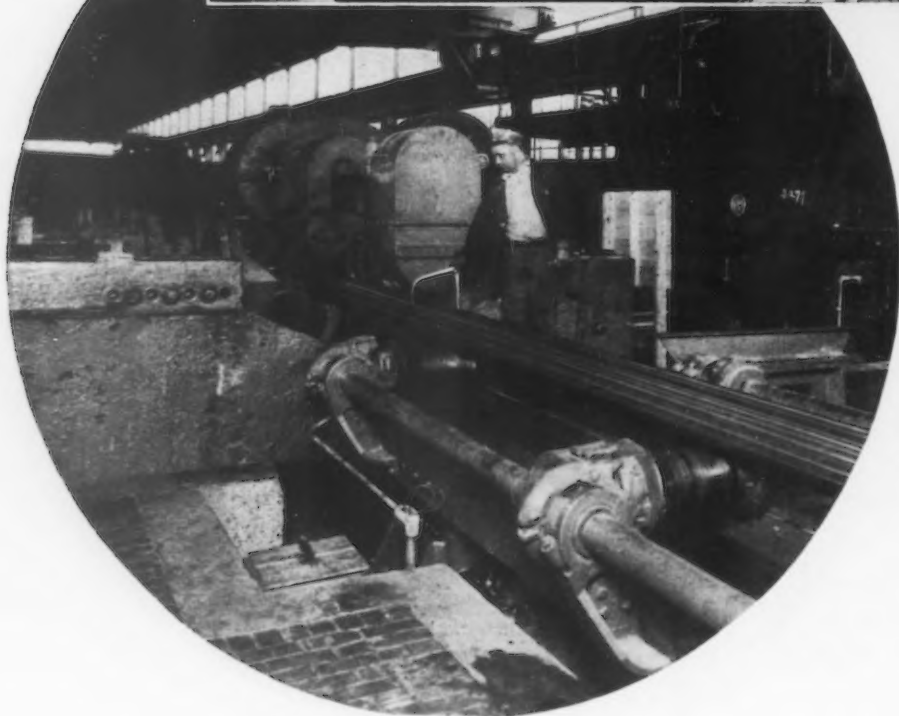
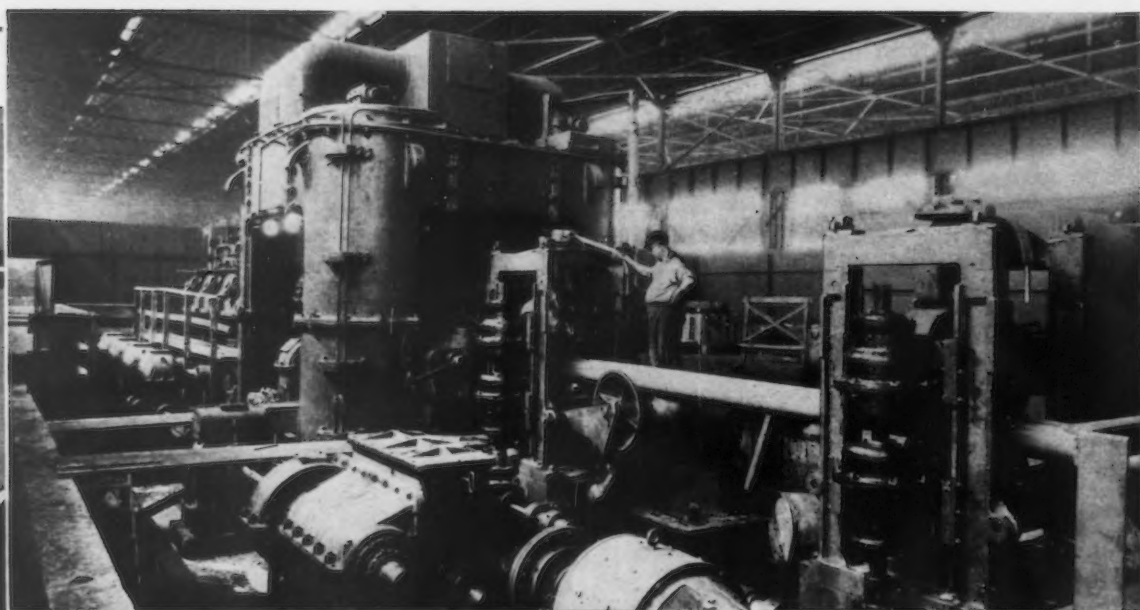
Core oven walls include  $4\frac{1}{2}$  in. of firebrick, 6 in. of hollow tile,  $2\frac{1}{2}$  in. of insulation and  $4\frac{1}{2}$  in. of common brick. This construction is necessary, since part of the oven extends out into the open, and heat radiation

have two rows of burner tips while the center burner has one row. Two stacks in the top of the oven are equipped with dampers, while fresh air is brought into the oven and to the burners by air ducts extending laterally and under each burner. This oven consumes about 1320 cu. ft. of gas for each ton of dried cores, the work consisting of a large variety of sizes.

While there are several core-making units, set up at different places in this foundry, mention will be made only of that for tractor cores. Here is located a core sand conditioning machine with overhead bins and automatic scales, the sand being ground with water, oil, etc., between steel wheels rotating against a steel bottom plate and revolving about a vertical shaft. The correct amount of oil for each batch is obtained through the use of an air-operated valve on the oil supply line, which automatically shuts off when the right volume has passed through.

This prepared sand is elevated by bucket conveyor to hoppers which drop it on to belt conveyors which take it to points just over the core makers. There it drops by gravity and through chutes directly into the core boxes on molding machines. The sand feed is started and an automatic device shuts off the flow when the correct amount, for the core being made,

(Concluded on page 446)



## Republic's New Mill Welds 10 Miles Pipe in 24 Hours

**P**RODUCTION of electrically welded steel pipe, ranging in diameter from 8½ in. to 16 in., is accomplished by a mill recently placed in operation by the Republic Steel Corporation at Youngstown. The unit converts skelp up to ½ in. in thickness into pipe at the rate of approximately 10 miles in 24 hr. It represents the adaptation of the Johnston patents to the electric pressure welding of large diameter, thick-walled tubing, and a second unit now under construction will be able to turn out 2-in. to 8½-in. pipe. A smaller mill, originally planned for experimental work, has been in commercial production for more than a year and has turned out successfully 2000 miles of 4 to 6-in. diameter pipe.

The Republic company is the second to apply the principle of electric welding to the manufacture of comparatively large diameter, thick-walled pipe to be used principally for carrying natural gas, crude oil and gasoline from production fields to large centers

of distribution. The electric processes have enormously speeded up production of pipe and have made possible the laying of lines more than 1000 miles in length in a single season. The Republic mill is capable of turning out pipe in lengths of 40 ft. or more, almost twice the length possible under the lapweld process, and the present usual limitation is imposed only by the capacity of railroad cars in shipping. Spot welding of the joints in the field may be accomplished with a minimum of time and labor.

Large gas and oil companies have responded to the possibilities offered by electric welded and other rapid-production pipe with the placing during the present season of more than 1,000,000 tons of line pipe, most of which will be in active use by the end of the year.

### Preparation of Skelp

The new Republic mill has been installed in a building adjacent to the company's plate mills, and the



## ew Mill Electric 10 Miles of in 24 Hours



skelp in lengths of approximately 40 ft. is delivered directly to the new pipe units. In preparation for welding, the edges are planed by means of two large planers which shear both edges simultaneously. The planers also straighten the skelp and are equipped to handle material up to 50 in. in width, and over 40 ft. in length. On thin material the edges may also be successfully prepared for welding by means of slitting. The skelp goes next through the sand blaster, where scale is removed. Material may also be descaled and deoxidized by pickling.

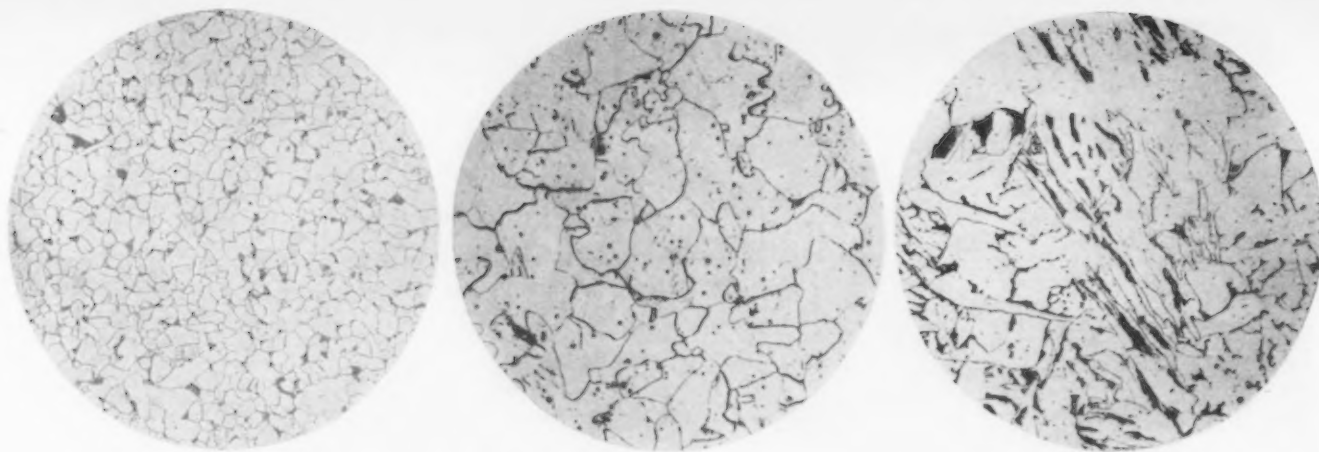
### Welding Heat Quickly Dissipated

The skelp is now ready for the welding operation and is transferred over mechanical skids into a set of forming rolls. The seam is at the top and passes through the welding unit in contact with two revolving circular electrodes. The action of the revolving electrodes is so rapid that the welding heat permeates

*IN the making of Republic's electric welded pipe, skelp is prepared by shearing of the edges and sand blasting to remove scale, and it then passes to welding machine (upper illustration on opposite page) where welding is performed by two revolving circular electrodes. The forming operation is shown in illustration at top of this page, the straightening operation on the opposite page and the beveling operation in circle on this page.*

the material for less than an inch on each side of the seam, and immediate cooling is accomplished with heavy application of water as the pipe passes through straightening rolls after it leaves the welding machine. The quick application and dissipation of heat in the welding operation is designed to prevent abnormal grain growth in the territory adjacent to the weld. From the straightening rolls the pipe is delivered to





the saws and testers without further machining or processing.

After the ends of the pipe are cropped, a crush test is made on a crop of each piece of pipe. Any defects are thus brought to light before material passes on into the beveling and facing machines. Most of the pipe made by this process is beveled for spot welding in the field, although facilities are present for threading if desired. The pipe is then tested hydrostatically in the usual manner, being jarred by pneumatic hammers at both ends and in the middle, while held under the required pressure automatically indicated by means of a system of lights. This seems to eliminate completely the human equation in testing, but a further careful inspection of the line of weld is made after the pressure has been removed from the pipe.

#### Advantages Claimed for Weld

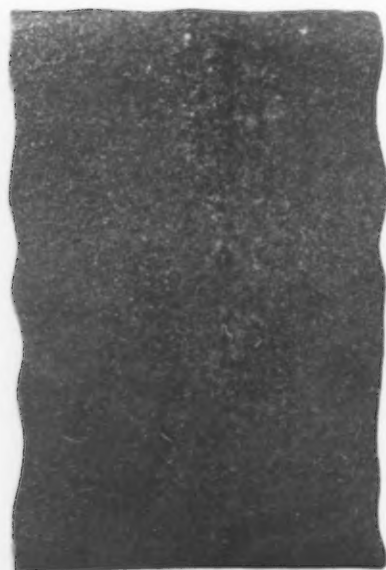
The process permits complete supervision of the forming of the pipe through the entire operation. The temperature in the welding operation is maintained constant, and there is found to be no variation of wall thickness in the finished tubing. Planing of the edges and sand blasting assure freedom from oxides which might interfere with the welding process, and mechanical handling throughout reduces manual labor to

a minimum. The pipe, when completed, is clean inside and outside.

Extensive metallographical studies of the weld, as shown in the accompanying photomicrographs, indicate the almost complete absence of abnormal grain structure in the vicinity of the weld. No spots appear under high magnification on ordinary carbon steels, and further research indicates that equally good results may be obtained in the case of alloyed materials.

Crushing tests have generally proved successful. Pressing into oval form has been accomplished without affecting the strength of the pipe. Bursting tests demonstrate the pipe to have a high degree of ductility, with no shattering. In these tests the pipe has withstood pressure up to 7200 lb. per sq. in. without bursting, and ductility is further shown by the tendency toward excessive bulging before failure. Transverse tests of seams spot-welded at the joints indicate no tendency for failure along the line of weld.

A recent publication of the Rensselaer Polytechnic Institute, Troy, N. Y., contains two articles, one entitled "The Nickel-Iron-Copper System" by Peter R. Kisting, and the other, "The Nickel-Iron-Chromium System" by Walter A. Dean. It is No. 26 of Engineering and Science series and has 55 pages.



#### PHOTOMICROGRAPHS

(Above) Represent, Left to Right, Normal Structure of Body of Electric Welded Pipe, of Buttweld Pipe and of High Heat Structure of Buttweld Pipe, All 100 Diameters

\* \* \*

STRUCTURE of 0.250 Gage, 6% In. Electric Welded Pipe, Normally Etched with 5 Per Cent Nitric Acid,—Magnification (Left) 12 Diameters and 250 Diameters—at the Weld





## Specific Training in the General Motors Institute of Technology

By FAY LEONE FAUROTÉ

**T**O one who has been associated with industry, the need for specific training is obvious. Nor is "its utility passing," as one of our brilliant writers would make us believe. Quite the reverse. Nevertheless, the persistence with which these false beliefs relating to vocational training are held is amazing. The truth should be told.

According to latest Government statistics, the total American vocational enrollment is in excess of 3,000,000. In 1920 the number of students taking advantage of vocational training was 265,058; by 1924 this number had increased to 652,594. In 1927 there were 784,986 students, and by 1928 the total had reached 858,456. Of this number, 492,458 students were male and 365,998 female. Courses in agriculture claimed 144,901 of them, home economics 175,944, while courses in trade and industrial schools were taken by 537,611 students.

It will be seen that the rate of increase of enrollment is advancing with rapid strides. Yet not over

"**I**NDUSTRY, after all, is nothing but the application of human knowledge; and to gather knowledge and organize it is about the most exciting adventure of life," said Judge Gary, in discussing the technological laboratory of the United States Steel Corporation. "So long as the steel industry keeps on gathering knowledge and coordinating it, it is bound to remain young and vigorous."

5 per cent of the wage earners of the United States have had an opportunity to secure training to enable them to take a better position in shop or trade. Of late years, however, the Government, both Federal and State, several groups of organized labor,

and a number of the larger industrial establishments have joined the privately-endowed schools, to help remedy this condition.

That the so-called cultural schools, which operate on the faculty psychology that abstract virtues and knowledge may be so taught that their utility will become evident in later years, have been proved to be inefficient, is a view held by many. Today it is readily admitted by most progressive pedagogues that habits must be created which are concrete and instantly applicable to the job in hand. Furthermore, the rate at which the world is developing has compelled the establishment of vestibule schools, which shall have the ability to teach within a short time the fundamentals to make a man an independent economic unit.



**P**RECISION Room, Where the Student Is Familiarized with Exactitude in Measurement, and the Meaning of Close Tolerances. Progress reports (next page) give much information regarding the young man's probable future value as a member of the organization. In his "Application for Enrollment" the candidate must supply data far beyond the usual requirements of most organizations

The doctrine that the coming of machines will produce a race of robots is likewise false. True, many men are required to perform work which calls for a few simple operations only. These are frequently repetitive in character and easily learned. Many of them can be performed by workmen of low natural intelligence, or by operators who are physically sub-normal. In fact, with the coming of mass production, machines, the divisions of jobs into small ones involving a few operations only, this system of mass production has made possible the employment of thousands who might not otherwise have been capable of employment—at least not in such industries.

#### Genesis of Technological Unemployment

But let us, for the moment, look at the other side of the picture. Take, for example, a concrete case: the operation of a steel furnace. In the old way of doing things, many men of considerable skill were required to operate the furnace. Now only a few men are needed. The responsibility carried by these few men, however, is very great. Furthermore, they must be 100 per cent efficient in doing their job, otherwise great loss of property and human life may result. Yet no one of these men with whom I have talked would go back to the old way of doing things. Nor would any of the men performing similar repetitive operations on lathes and planers.

Say the opponents to this present day progress:

What about the men who have been displaced? What happens to them? Well, for one thing, our modern machines have created more types of occupations; they have shortened the apprenticeship period; they have made vocational training possible; given the proper guidance, men released thereby have had the physical burdens lifted from their shoulders. They have been given an opportunity, if they will take it, of entering another industry for which they are entirely fitted, and from which they will receive an even higher wage.

To the man who says that machine civilization is bringing about a mental apathy among the working classes and destroying the need for constructive thinking and craftsmanship, the answer is: Someone must design and build the machines, someone must prepare them for operation, someone must plan for the material handling, someone must analyze the job, someone must predict and control its operation. In a word, there is an even greater need for thinking and for skill than ever before.

The old tradition that the old times were better, that the old workmen were wiser and handier with tools, that they could produce a better product; these beliefs are not based upon facts. There has never been a time in the world's history when finer workmanship was possible, when men possessed greater skill, nor when the resulting product was more worthy. Methods of securing material, of transporting it, of



composing it, testing it, treating it, fabricating it, have never been better.

Moreover, the life of the workman himself is better—better light, better air, better food, a better home, more leisure, these are all his today. They were not before. One need only consider the plight of the European peasant, or read of the industrial conditions a century ago, to realize that this is so. The old apprentice system is antiquated, and so are all the systems, beliefs and practices which are founded upon its use.

Invention and research, the advent of new skills, new tools, the increase in kinds of occupation, a wider system of communication, ever-increasing speed in transportation; these have so multiplied and varied the duties of mankind that one must today be a specialist to survive. Thus vocational education has been directed away from the standardized and traditional form of academic training, and shaped to meet specific needs under life conditions.

Vocational training has come because it is needed, demanded. It has demonstrated its ability to provide industry with its many necessities. Despite what its opponents may say, it is a present-day fact that voca-

tional education is growing so rapidly as to make little defense of its practices necessary.

Starting with an instructor, who is himself a master of the science or practice he teaches, the school environment has become the working environment. The training is specifically given to those who want it and are able immediately and directly to apply it, under conditions which the factory and labor market demand. The instruction is liquid, usable, adequate; dynamic—not static; concrete—not general; a mental tool with a keen edge kept sharp by constant use. Yet, like all things progressive, it meets on every hand the opposition and scorn of the older, outgoing system.

#### Industry Prepares Its Own Future Leaders

A FEW great corporations have aspired to provide an adequate program of personnel development. Their educational work, specific though it may be in character, stands out as eminently thorough and far-reaching. Such is the General Motors Institute of Technology at Flint, Mich. Here the work is carried on by four divisions: the Cooperative Engineering Program, the Automatic Service Division, the Spare-Time Program and the Trade Schools. The purpose

**GENERAL MOTORS INSTITUTE OF TECHNOLOGY**  
**PROGRESS REPORT—CO-OPERATIVE ENGINEERING STUDENT**

Mr. \_\_\_\_\_

Kindly fill out the following report of the work and conduct of the indicated Co-operative Engineering Student who has been working in your plant during the period indicated. This information is requested to assist the Institute in determining the student's progress and also his capacity and aptitude in practical work. The report will form a part of the student's permanent record at the Institute.

It is suggested that the person having the most intimate knowledge of the student's work make the rating by comparing him with the average man in the same department. The relative position of the check in the space provided will give the student a definite grade for each characteristic.

Year \_\_\_\_\_ Period \_\_\_\_\_ to \_\_\_\_\_

Student \_\_\_\_\_ Dept. \_\_\_\_\_ Clerk No. \_\_\_\_\_ Rate \_\_\_\_\_

Plant \_\_\_\_\_

Nature of job to which student was assigned for the period \_\_\_\_\_

CHARACTERISTICS	INDICATE STUDENT'S RATING WITH CHECK MARK				
	ENTHUSIASTIC	INTERESTED	AVERAGE	INDIFFERENT	NOT INTERESTED
ATTITUDE TOWARD WORK		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
WORKMANSHIP	EXCEPTIONAL	ABOVE AVERAGE	AVERAGE	INDIFFERENT	OBSTRUCTIVE
COOPERATION	EXCELLENT	WILLING	AVERAGE	BELOW AVERAGE	TRICKLEBONE
CONDUCT	EXCEPTIONAL	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	SHIFTY
FITTING INTO DEPARTMENT	EXCEPTIONAL	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	NO FUTURE PROMISE
EVIDENCE OF FUTURE VALUE	EXCEPTIONAL	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	NO FUTURE PROMISE
ATTENDANCE	REGULAR	IRREGULAR			
PUNCTUALITY	REGULAR	IRREGULAR			

Remarks \_\_\_\_\_

Suggested Subjects for Continuation Report Assignments for Next Work Period \_\_\_\_\_

Date \_\_\_\_\_

**APPLICATION FOR ENROLLMENT**  
in the  
**Cooperative Oakland-Pontiac Service Course**  
**GENERAL MOTORS INSTITUTE OF TECHNOLOGY**  
affiliated with  
**INDUSTRIAL MUTUAL ASSOCIATION**

I hereby make application for enrollment in your Cooperative Oakland-Pontiac Service Course. In consideration of your reserving a place for me in the 19\_\_\_\_ class during consideration of this application, I enclose (check, draft, money order) for forty (\$40.00) dollars and should my application be accepted, I promise to complete agreement for the one-year course on the cooperative plan which is described in your bulletins and with which plan I am thoroughly familiar.

It is understood and agreed that if this application is accepted, the forty (\$40.00) dollars enclosed shall apply as part payment of my tuition, and should the application not be accepted the forty (\$40.00) dollars is to be returned to me promptly.

The facts hereinafter set forth are furnished to enable you to properly consider my application and are true to the best of my knowledge and belief.

Name (in full) \_\_\_\_\_ Age \_\_\_\_\_  
Last \_\_\_\_\_ First \_\_\_\_\_ Middle \_\_\_\_\_  
Address \_\_\_\_\_ Married or Single \_\_\_\_\_  
Place of Birth \_\_\_\_\_ Date of Birth \_\_\_\_\_  
Month \_\_\_\_\_ Day \_\_\_\_\_ Year \_\_\_\_\_  
Nationality \_\_\_\_\_ Naturalized \_\_\_\_\_ Color \_\_\_\_\_  
Parent's or Guardian's Name \_\_\_\_\_ Relationship \_\_\_\_\_  
Parent's or Guardian's Address \_\_\_\_\_ Nationality \_\_\_\_\_  
Parents Both Living \_\_\_\_\_ Father's Education \_\_\_\_\_ Mother's \_\_\_\_\_  
Father's Occupation \_\_\_\_\_ Where Employed \_\_\_\_\_  
Religious Preference \_\_\_\_\_ Are You a Member? \_\_\_\_\_  
Health \_\_\_\_\_ Height \_\_\_\_\_ Weight \_\_\_\_\_  
Physical Defects or Deformities: \_\_\_\_\_  
Speech \_\_\_\_\_ Hearing \_\_\_\_\_  
Arms \_\_\_\_\_ Sight \_\_\_\_\_  
Legs \_\_\_\_\_

Previous Education  
Name and Address of High School \_\_\_\_\_  
Number Years in High School \_\_\_\_\_ Grade Completed \_\_\_\_\_ Graduation \_\_\_\_\_  
High School or Trade School \_\_\_\_\_ Course \_\_\_\_\_ Years Completed \_\_\_\_\_  
Other Education \_\_\_\_\_

Experience and Courses Taken in Auto Mechanics \_\_\_\_\_

NOTE: Attach statement of all school credits earned by proper school officials.

Previous Employment  
For \_\_\_\_\_ Position \_\_\_\_\_ Time Employed \_\_\_\_\_

References  
Name \_\_\_\_\_ Address \_\_\_\_\_ Occupation \_\_\_\_\_  
Signature of Applicant \_\_\_\_\_  
Signature of Parent or Guardian \_\_\_\_\_  
Photograph of parent: \_\_\_\_\_  
OAKLAND-PONTIAC DEALER'S AGREEMENT (See over)



*Heat-Treating Room, with Appliances for Studying the Effect of Treatment on Various Metals and Alloys*

of the Institute and the place it occupies are best indicated in the words of Alfred P. Sloan, Jr., president of the corporation:

"Problems incident to the direction of the growing personnel of this corporation have made necessary plans for selecting men with potentialities for broader responsibilities, and attempting to train these men for advancement. In years to come this plan should have an important bearing upon General Motors, as it is our desire that the senior executives of tomorrow come from our junior executives of today. Executives of General Motors recognize their obligation to the stockholders to do everything possible to promote the progress and growth of the business; and their obligation to the employees to adopt policies which will promote their health, happiness and prosperity.

"General Motors realizes that, to succeed permanently, its men must be placed in the proper position to render the best effort that is in them; since what makes the wheels of industry go around will always be men, no matter how automatic the machinery may become.

"As a part of our several plans to help our employees help themselves, we established in Flint the General Motors Institute of Technology, at which an opportunity is given employees to train for greater responsibilities in the corporation, its division and subsidiary companies."

Major Albert Sobey is director of the school. To him and the assistant director, Guy R. Cowing, must be given the credit for this school's rapid growth and efficiency.

#### **What the School Is and What It Does**

"When I came to Flint from the Army in the fall of 1919," said Major Sobey, "the work was started in rather crude, temporary quarters in the old Copeland factory building, with some 300 students in the eve-

ning school. The building was certainly not an inspiring setting, but out in the plants

and in the lives of the men who came to us there was a big and tremendously fascinating problem.

"In the factories was the rapidly developing industry with its emphasis upon machinery and highly specialized operations, and involved in them were men of all ranks, reaching out with ambitions for a broader, more successful life, for a means to prepare themselves for greater efficiency, for promotion or transfer to other types of work offering greater promise for the future.

"On the other hand, the industries themselves were in need of trained men and a higher degree of intelligence and skill in the many varied branches of their organizations. Out of this situation was developed the two-fold policy upon which this program has been built. First, to organize spare-time courses of training along any line directly or indirectly related to the automobile industry, which should be of value to a considerable number of employees in the plant. Second, to organize special courses of training for all types of work in the automobile industry, for which a need for a considerable number of employees existed, which was not being met by the spare-time program.

"Naturally, the spare-time work was developed first, and, to meet the varied conditions of education, experience and ability of the men who presented themselves for training along any one line, it was necessary for us to organize our program in a flexible way, with short unit courses and with emphasis placed upon the organization of the instruction within the units in such a way as to make it individual in its application. On this basis something over 200 of these spare-time courses were organized.

"These were arranged in suggested sequences covering more important lines of work and extending



from one to six years, so that it is possible for an employee to come into this institution, select the particular unit he needs for his next step in advance, and then, using his spare time, build unit upon unit in a flexible program that can readily be adapted to his individual needs.

"At the end of the first year our building was torn down and we found ourselves without a home, until finally we located in an abandoned parochial school, where of necessity we continued to function as a spare-time evening school for three years.

#### Expanding the Usefulness of the Work

"It was during this period that our training work for foremen was begun, and the entire spare-time program developed to a point where we needed additional facilities. These were provided in the fall of 1923 by our Industrial Mutual Association in the Industrial Bank Building. With this added space, equipment was provided to make possible the development of the full-time courses of training needed by the plants in service, trade training and cooperative engineering courses.

"The service training took the form of the Buick Authorized Service Course. This course is so organized as to place emphasis upon the fundamentals of automobile construction and modern methods of maintenance and repair, and their application to one set of conditions—the Buick car—in such a way as to supplement the practical experience of men from service organizations and give them a confidence and a fundamental working knowledge of modern automobile service. The results have been satisfactory, and graduates of the course are now serving in practically every State. The course has been used by the Export company for training service men, and also to give a technical knowledge to salesmen. Just now we are organizing an adaptation of this course for the Export company, covering Buick, Oakland and Pontiac.

"For young men interested in this field, but lacking experience in service work, we organized a one-year cooperative course.

"In the field of skilled crafts we organized what we call technical trades courses—an apprenticeship training for tool and die making. This course has been conducted upon the cooperative plan.

"Out of our program for foremen and executives the cooperative engineering course was developed. It is a four-year course of college grade for young men of high school education, and is designed to give them a four-fold specific training in preparation for future service in General Motors organizations. The training at the Institute covers the fundamental subjects of engineering and the principles of industrial engineering and management, while out in the plants during their working periods the students are given a directed practical experience and also a contact with men. This course utilizes the fundamental cooperative principle of education, with the advantage of a close correlation of instruction with practical experience made possible by the relation between the Institute and the corporation.

"The school grew very rapidly. For the school year 1919-20, the student term-hours were less than 4000. In 1926-27 they were about 40,000. In 1925-26, when

it became evident that we were at the limit of our facilities, Mr. Bassett and several other men became interested in securing additional facilities. These have now been provided in this building, and under the new name the service of the Institute is to be extended to all units of the corporation.

#### Cooperation with Many Industries

"Differing from so many industrial centers, an industry-wide spirit of cooperation has governed all the work we have done. We have worked here impartially in all the various industries, and they and their employees and executives have worked together on advisory committees and in other ways to make our program as practical and effective as possible. This program is due in large measure to the work of those men, and great credit is due them.

"We all recognize the advances which have been made in the product of the corporation by a coordinated effort in research, design and experimental work. A similar cooperative program in the training of skill and intelligence should bring corresponding advances in this field. This, as I see it, is the principle upon which this organization is founded. It is the spirit in which it is conducted—that, working together, we may accomplish results in the development of man power, in leadership, and in the promotion of human relations, comparable to the splendid progress that has been made in the mechanical features of the automobile, and in this way insure the largest measure of satisfactions in life to the employed personnel, and also assure for the future the continued advancement and leadership of the corporation.

"The Institute building has four stories, containing over 100,000 sq. ft. of floor space. The ground floor is used for trade class rooms, drawing rooms, student headquarters, and shower and locker rooms. The first floor is devoted to automotive service laboratories and class rooms, machine shops and tool rooms, and service station. The second floor contains general offices, library, physical, chemical, metallurgical and electrical laboratories, assembly hall, gymnasium. The third floor has drafting and class rooms.

"There are facilities for 2800 day and evening school students. There are 42 members of the faculty giving their entire time to the work, and in addition 60 part-time instructors, men from the plants who are experts in their lines. The total number of enrollments for 1929 in all departments, including extension, was 10,477. At present there are enrolled at the institute 3039, as follows: Engineering, 619; trades, 50; automotive service, 164; spare-time (fall term), 2206. In addition to this number at Flint, there are over 4000 in extension courses."

(To be continued)

A new publication, to appear bi-monthly, has been announced in The Netherlands, to supply a bibliography of the more important publications of a technical nature appearing both in book form and in periodicals. The proposal is to include approximately 12,000 titles a year at the outset and the price per annum has been put at £3. The *Repertorium Technicum*, as it is called, will be published by a committee of the Nederlandsch Instituut voor Documentatie en Registratuur, 30 Carel van Bylandtlaan, The Hague.





# An All-Metal Apartment House

wall. These are: (1) sheet aluminum with aluminum framework, insulated and waterproofed; (2) sheet aluminum with steel framework, waterproofed and insulated; and (3) a wall built of Allegheny metal, KA2. Sheet steel was discarded because of the cost of maintenance. Other metals were studied but discarded because of high cost or possible impracticability. Riveting the sheets in place was discarded as also impractical. Welding was considered costly and not necessary. It has been decided to clamp the sheets to the framework with straps, all edges having been formed to permit lock-seaming.

This 3½-in. insulated metal wall is regarded as equivalent to a 36-in. brick wall in insulation value. Erection time saved by use of the metal wall is an important item in the cost of the building.

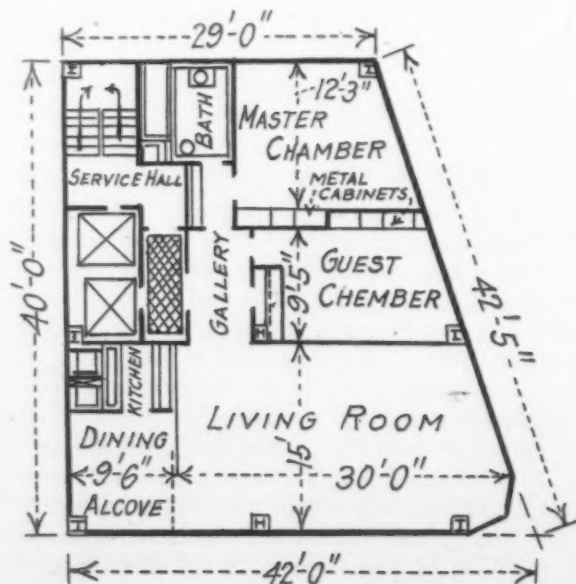
Floor construction was considered from the viewpoints of cost, time to erect and sound insulation. The types considered were: (1) reinforced concrete floor,

**A**N all-metal apartment house has been designed by Bowman Brothers, Inc., architects, Chicago, in which city the structure is to be erected. Maximum rentable floor area resulting from the use of insulated metal walls and an extra floor, within the height limit of the zoning ordinance, are two of the outstanding features. The framework of the building will be of fabricated structural members. The walls will be insulated and the floors will be of the battledeck type of construction.

The metal insulated walls offer three major advantages. Owing to their comparative thinness the usable floor area is increased. Their weight is less than that of masonry and thereby dead loads are reduced. The effectiveness of the insulation as compared to ordinary masonry is such that electric heat is likely to be incorporated as a feature of the building.

The thickness of the insulated metal wall is 3½ in., whereas the corresponding dimension of fireproof spandrel wall construction according to current practice is 14 in. The non-rentable area of a building of this type usually includes elevators, stairs, public halls, chimneys, air ducts, columns, partitions and exterior walls. Each floor of this building, if designed with masonry walls, would have 965 sq. ft. of net rentable area. This figure is increased 135 sq. ft., or 14 per cent, by the use of insulated metal walls. This means that the use of metal construction increases the income from each floor by 14 per cent.

Analysis has been made of three types of metal



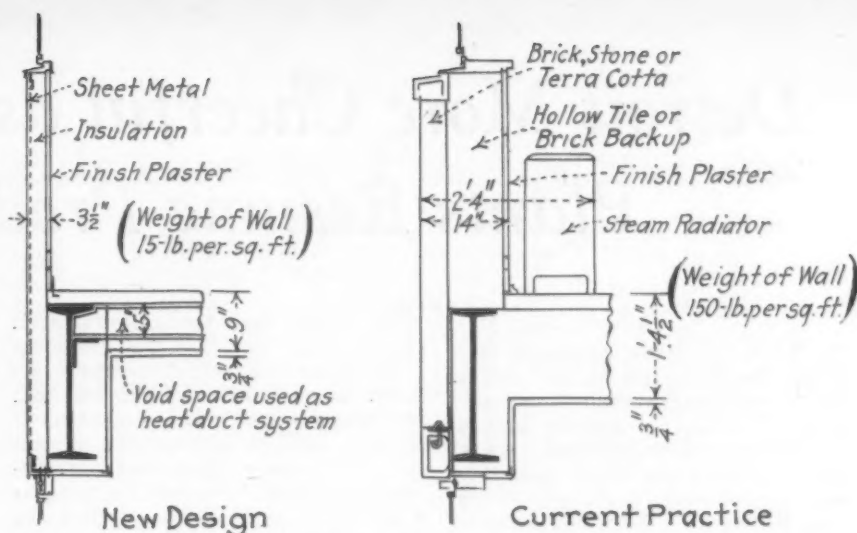
Typical Floor

*The thinner walls of this apartment house plan are said to represent a 14 per cent increase in rentable area*

girders and columns; (2) reinforced concrete floor, steel girders and columns; (3) tile and joist floor, steel girders and columns; (4) flat arch tile floor, steel girders and columns; (5) all steel battledeck floor, steel girders and columns, spandrel wall with brick facing and hollow tile backup; and (6) all steel battledeck floor, steel girders and columns, spandrel wall of metal filled with mineral wool.

For a typical 25-ft. span, floor thickness (including finish floor) for the flat tile arch construction would be 16½ in., and for the battledeck steel floor 9 in.

In the part of the city where this building is to be erected 20 stories are now permitted under the present zoning ordinance. The saving in the thickness of floors will permit one and one-half additional stories without sacrificing clear ceiling height and thus an extra floor is available as rentable space.



**Battledeck flooring reduces waste height, and suggested use of electric or indirect heating eliminates the direct radiator**

This metal building is to be fabricated almost entirely in shops, thereby reducing the time and cost of erection at the site.

## The Increasingly Important Role of Chemistry in Steel Making

CHEMISTRY'S important role in steel-making is emphasized in a report by Dr. C. H. Herty, supervising metallurgist of the United States Bureau of Mines, Pittsburgh, to the iron and steel section of the National Research Council's science advisory committee, which is working on plans for an iron and steel exhibit at the Chicago World's Fair in 1933. He said in part:

"The major role of chemistry in steel-making processes has been to formulate methods for the determination of various substances in steel and, once the effect of these substances has been determined by the metallurgist, to assist in working out methods for the elimination of the harmful material.

"Until recent years the contribution of the chemist has been on the analytical side rather than on any major developments, although some of the major developments have depended on the correct knowledge of what was in the raw materials and how certain elements could be eliminated from the steel. Scientific investigations on steel-making processes may be divided into fairly definite periods so far as the type of work is concerned.

"From 1860 to 1877 considerable attention was given to gases in steel, because the Bessemer and open-hearth processes were just coming into use and a good deal of trouble was being encountered with gases.

"The second period, 1877 to 1899, saw much work being done on the removal of phosphorus from iron, most of this work being carried out in England where high-phosphorus ores prevail and the phosphorus in

the finished steel was generally too high to meet specifications of the finished product. Most of this research centered on the use of lime as a dephosphorizer and on studies on the function of both lime and iron oxide in dephosphorization of steel.

"In the period 1899 to 1902, a great deal of attention was given to the elimination of sulphur from iron and steel, the two main methods of attack being the use of manganese to desulphurize pig iron and the use of lime in the open-hearth to desulphurize steel.

"During the period 1902 to 1912, the effects of oxygen in steel began to be appreciated and investigated. Some time before this Ledebur had developed his method for the determination of oxygen by reduction of the steel sample with hydrogen and during the above mentioned period a good deal of work was done on determining the oxygen content of various steels.

"The period 1912 to 1922 saw further attention paid to oxygen in steel and new methods devised for the determination of the oxides. By this time the elimination of sulphur and phosphorus was pretty well understood and investigations on these two metalloids were rather infrequent.

"From 1922 to 1930 increasing attention was paid to oxygen in steel, with particular emphasis on the various types of oxygen compounds present, the non-metallic inclusions in steel. The increased activity on this subject was very largely due to the increasingly rigid specifications of buyers, particularly in the automobile trade."



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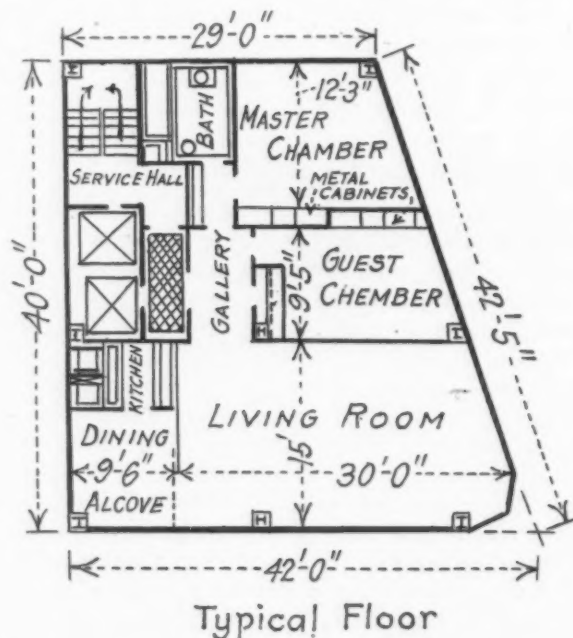
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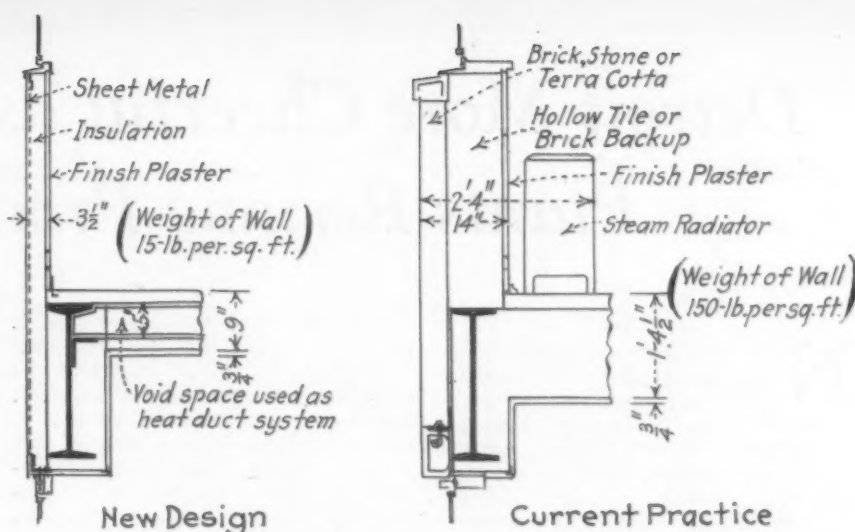
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# Detroit More Cheerful as Motor Car Plants Resume Production

DETROIT, Aug. 12.

**N**OW that many automobile manufacturing plants are back in production, even though on a curtailed basis, the general tone of the industry is better than a week ago. Ford is going ahead on a four-day week schedule, pushing its output back toward the level which prevailed prior to the three weeks' halt in activities. Chevrolet's August business is expected to be practically on a par with that of July. In fact, one report states that orders on hand at the beginning of the month were larger than on July 1. Shipments by Studebaker in August are likely to be the best this year. About 5500 cars were made in July, and the schedule this month is said to call for a 50 per cent increase. The public's response to the announcement of the Chrysler eight is declared to have been a piling up of a gratifying volume of orders. Buick is understood to have shipped 15,000 to 16,000 eight-cylinder cars in July, with the August program set at 20,000.

Some of the other makers, however, are not so active. Hudson-Essex's position remains relatively weak, with retail demand light. Willys-Overland is counting on an output of 7000 cars this month. Reo is preparing to bring out an eight-cylinder model, while Gardner will announce its 1931 line in a few days. The Dodge factory is said to have been down to 700 to 800 cars a week, with the plant open only two days. The Auburn company expects to put out close to 800 cars in August at Auburn and Connersville, about 170 of which are Cord front-wheel drives. Pierce-Arrow is planning production of 600 to 700 cars and Peerless 600 this month. Hupmobile is turning out approximately 500 cars a week. Oldsmobile-Viking opened its plant this week after a vacation period. The White Motor Car Co. at Cleveland closed last Saturday for two weeks.

## July Output 275,298 Units

**T**HE National Automobile Chamber of Commerce unofficially places July automobile production in the United States and Canada at 275,298 cars and trucks, compared with 350,656 in June and 518,301 in July last year. This is a somewhat better showing than many had expected. Indications are that output this month will run slightly ahead of that of July. As the plants which have been closed get into full swing, operations will be stepped up until the weekly rate near the end of August should be consider-

ably higher than now. However, it must be admitted that this statement is predicated on several uncertain factors. The industry is in an excellent position as regards stocks in hands of dealers, and the volume of used cars is not excessive. Therefore, improvement in retail sales will be felt immediately by the factories. But the big question is whether people are in the mood to buy. Unemployment has at least temporarily made it impossible for some to invest in automobiles; others have seen their incomes shrink alarmingly this year and therefore are cautious about expenditures. Then the conservative note which rules on all sides exerts a restraining influence.

At the moment a new disturbing cloud is the nation-wide drought. The distress which it is bringing to many parts of the country is likely to reduce further the ability of people to buy automobiles. Since a considerable portion of the market for low-priced cars, especially Fords and Chevrolets, is in the rural districts, the present dry spell is bound to hamper the recovery in retail demand. Few automobile executives are venturing opinions on what awaits the industry in the next few months. They realize that they may not be able to get a clear picture until general business indicates more definitely its future course.

## General Motors Truck Engines Made at Pontiac

**S**IX-CYLINDER, valve-in-head engines heretofore made by the Buick Motor Car Co. for General Motors trucks, coaches and cabs will be manufactured in the future by the General Motors Truck Corporation at Pontiac, Mich. During the many years that Buick concentrated on turning out a six-cylinder car, these engines were made at the Buick factory at Flint, Mich., but now that Buick has graduated into the eight-cylinder class, continued production of the six-cylinder engine does not fit so well into its plans. Therefore, the machinery and other equipment for its manufacture has been transferred from Flint to Pontiac, and with them goes a group of employees and their families. The General Motors Truck Corporation has purchased the surplus of Buick six-cylinder engines following the change of Buick to an eight, and about a third of the company's Rapid Street plant in Pontiac will be given over to the new unit. This most recent change concentrates in Pontiac virtually all of the manufactur-

ing operations required in turning out General Motors commercial vehicles.

## Durant Reorganizes

Apparently a reorganization is the order of the day in Durant Motors, Inc., at Lansing, Mich. The chairman of the board, president and vice-president have resigned after a visit of W. C. Durant to the factory. Sales of the company's cars have lagged far behind those of other companies in the same price bracket, and it had become noticeable to observers that something must be done to revive the flagging interest of the motor public. It is understood that announcements of reorganization plans will be made shortly. While in Lansing, Mr. Durant is said to have gone about in a tiny French car and one report going the rounds credits European motor car builders with having become allied with him in the operation of the Lansing factory.

## Plymouth Goes in for Radio

**C**HRYSLER is reported to be highly pleased with the reception which its new line of eights has received. The Chrysler people seem willing to pioneer in some things which other automobile companies hesitate to take up. For instance, any closed Plymouth model will be wired for radio free of charge at the request of the buyer when the car is purchased, and the Transitone radio, made by the Automobile Radio Corporation, will be installed at a comparatively moderate cost. Arrangements have been made whereby these radios will be serviced by some 22,000 Willard battery stations in all parts of the country as well as by all Plymouth, De Soto and Chrysler dealers. In the opinion of some automobile makers, Plymouth is stealing a march on its competitors by this innovation. On the other hand, there are some who do not believe that there is yet a genuine demand for or much interest in radio equipment so far as the buying public is concerned. It will be interesting to see what develops as a result of Plymouth's plan.

## Chevrolet Gives Option on Wheel Equipment

Wire or disk wheels are now optional equipment without extra cost on Chevrolet passenger cars. Effective Aug. 1, all passenger cars shipped to dealers have wire wheels, but customers who prefer disk wheels can obtain them from dealers who have stocks of both types. Formerly all passenger cars, with the exception of



# Drought Beclouds Current Price Movements

BY LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

THE decline in the general level of commodity prices continues. During July, the Bradstreet index did not decline so rapidly, and serious drought damage to crops has recently put grain prices up, but down to the present writing each week has seen large excesses in the number of declines as compared with the advances in a long list of basic commodities, and the more barometric prices of metals and fibers trend lower. Bradstreet's index is still considerably above "pre-war" times, but is the lowest since 1915.

## Prices Advanced by Drought Hardly Favorable

There is often some tendency on the part of prices to recover in the second half of the year, and they turned upward in June, 1921; July, 1924, and in August, 1926. The rapid decline last month and the effect of short crops on farm prices may now indicate the approach of firmer commodity price averages. Would this be favorable?

Unquestionably more stable prices, considered alone, would help by removing uncertainty and by stimulating postponed buying. But just as certainly, serious crop damage is not favorable, and, to the extent that it would reduce the buying power of the farmers and curtail their purchases of steel and textiles, it might bring offsetting weakness to the markets for other than farm products (farm implements, wire and steel sheets). Will manufacturers who consume farm products be able to mark up their price of finished articles (flour, leather, etc.) in proportion to the increase in raw materials?

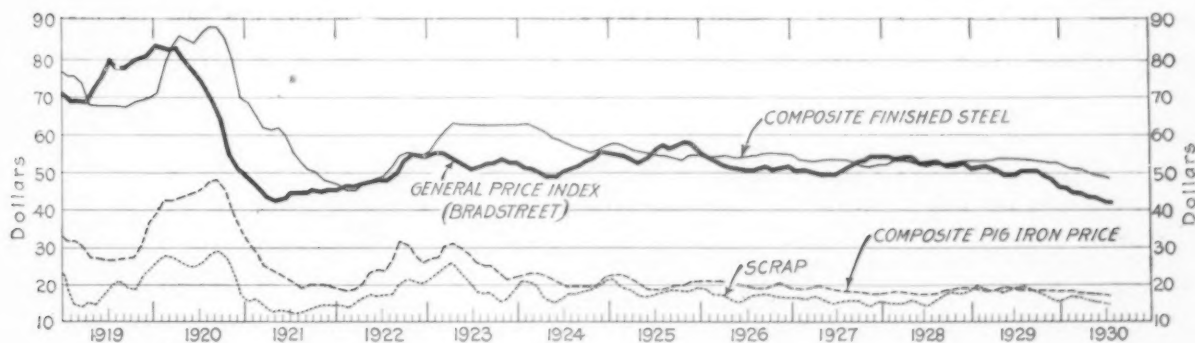
Another question concerns the balance among prices. We have been undergoing a process of readjustment, partly to reduce the price level in order to stimulate buying and partly to remove various maladjustments existing among different price groups. Would a run-up in grain and other farm products affected by drought damage hinder such readjustment and produce new disturbance and maladjustment in the price situation? It is hard

to see a serious drought in a favorable light.

One of the maladjustments during the past year or so is found in the relationship between finished steel and the general level of prices as measured by Bradstreet's index. Although THE IRON AGE index declined in July, this maladjustment continues. While the Bradstreet index is below the 1921 low point, finished steel prices averaged 8 per cent above their low level in early 1922. Heavy melting steel scrap is about 23 per cent above its 1921 low point, although pig iron is lower than then. (Scrap and pig iron are in fair adjustment, but both raw materials are higher in comparison with steel prices.) Until this spread between steel and the general level of prices begins to narrow, either as a result of higher average prices or lower steel prices, no recovery in the steel industry is probable.

## Wage Reductions Should Be Gradual

The discussion of prices brings up the question of wages. Why not mark up wages in order to bring about a general recovery of business? Our business leaders are saying that high wages increase purchasing power and keep business good. Why, then, not pay higher wages and make business better? Why not carry the reasoning to its logical conclusion? But at once, the smaller manufacturer objects that he cannot do this because his prices and profits are too low. He would have to shut down, and higher wage rates would only be nominal quotations. Wages are the price of labor and are paid out of the prices received for commodities. As commodity prices come down and dividends are passed, the price of labor must come down. If wage reductions are made gradually and as really required, the laborer need not be injured thereby, for his wage dollar will buy more. He would actually be benefited by lower wages if he could thereby keep his job by accepting such a reduction in wages as is proportional to reduced cost of living.



Either General Commodity Prices Must Advance or Steel Prices Decline to Expect a Recovery in the Steel Industry



# This Issue in Brief

Prevents abnormal grain growth in welded pipe by speed of welding operation. Welding heat permeates the material for less than an inch on each side of the seam. Weld is immediately cooled by heavy application of water.—Page 423.

\* \* \*

Cleans castings with water. Castings are lowered on to a revolving iron table. Three stages of nozzles, directed by men behind protecting windows, play high-pressure water on the castings, removing cores and sand.—Page 446.

\* \* \*

Saves 32 per cent by replacing drinking water ice coolers with refrigerated water system. Five ice tanks in one plant were operated at a yearly cost of \$2,000. Refrigerating system costs only \$1,395 per year.—Page 413.

\* \* \*

Industrial workers consume up to 1 qt. of water per hr. and higher. Production costs are cut by furnishing cool drinking water. Running long side lines off main supply is uneconomical. Better run the main supply line to each individual fountain.—Page 412.

\* \* \*

July daily steel output lowest in five years. Average production of 112,823 tons per day was 18 per cent under June and lowest since September, 1924. — Page 467.

\* \* \*

Welds 10 miles of pipe in 24 hours. New electric welded pipe mill can turn out pipe in 40 ft. lengths, almost twice what is possible under the lapweld process.—Page 422.

Farmers sustain heavy loss in buying power due to low prices and drought. Economist estimates loss over 1929 is one and a half to two billion dollars.—Page 407.

\* \* \*

Pipe welds withstand severe tests. Electrically welded pipe has been pressed into oval form without affecting the strength of the pipe. Ductility is indicated in pressure tests by excessive bulging before failure.—Page 424.

\* \* \*

Automatic oxy-acetylene shape-cutting machine sharply reduces fabricating costs, says manufacturer. Claims that, volume for volume, production schedules may be maintained in a plant one-third the size required by old methods.—Page 446.

\* \* \*

Steel prices still above the general price level, says Dr. Haney. While the Bradstreet general index is below the 1921 low point, finished steel prices average 8 per cent above their low level in early 1922.—Page 433.

\* \* \*

Cost of fabricating machine bases is greatly reduced by use of automatic oxy-acetylene cutting machine, says manufacturer. High accuracy is obtainable. Cuts are so smooth that for many purposes no further machining is required.—Page 417.

\* \* \*

Tradition that the old-time workman was wiser and handier with his tools than the present day workman is false, says Faurote. "There has never been a time in the world's history when . . . men possessed greater skill."—Page 426.

Rapid spread of vocational training is due to great demand for it. Vocational enrollment is now in excess of three millions. Yet not over 5 per cent of the wage earners have had an opportunity to secure training.—Page 425.

\* \* \*

Higher prices for farm products, due to drought, may produce a new disturbance and maladjustment in the price situation. Dr. Haney questions whether manufacturers who consume farm products will be able to mark up their prices accordingly.—Page 433.

\* \* \*

When cutting heavy steel plate having a carbon content above 0.25, preheat slightly before cutting and normalize afterward. Then no difficulty will be experienced in cutting.—Page 417.

\* \* \*

New apartment house has insulated metal walls and floors. Rentable area is increased 14 per cent. Insulated metal wall is 3½ in. thick. Sheets are lock-seamed and clamped to framework with straps.—Page 430.

\* \* \*

Farm implement manufacturers are not agreed on what to expect the remainder of the year. Depression in agriculture is not confined to this country. American farmers will face a staggering loss in income. Yet they must turn to machinery to lower their production costs.—Page 408.

\* \* \*

Molding sand storage tank operates without elevator. From the muller the sand drops on to an inclined belt which passes it to a Sandarator mounted on top of storage tank.—Page 419.

sport models, had disk wheels as standard equipment. The new wire wheels come in a variety of colors to harmonize with the car.

This new move on the part of Chevrolet only deepens the impression that the 1931 models will not differ a great deal from the present line, with the exception of a few added refinements. The report persists that Chevrolet will bring out its 1931 cars before the end of the year; also the report that it will offer both four-cylinder and six-cylinder models to intrigue the public into purchasing its products.

#### Will Graham Brothers Again Make Trucks?

**W**ILL the Graham Brothers go back into the truck manufacturing business, the field in which they won their greatest honors and biggest

financial success? This is a question being asked in Detroit today and most often answered in the affirmative. At the time that the Graham Brothers sold their truck business to Dodge they are reported to have made a five-year agreement to refrain from starting a competitive line. This agreement expires next spring and therefore the future program of Graham Brothers is the subject of much speculation.

#### Pig Iron Shipments Better

Pig iron shipments to automobile foundries have shown a gain in the past week, and even though the increase has been comparatively small, it has revived the waning spirits of the trade. The fact that some foundries which were shut down in July are again operating is mostly responsible for the betterment.

## Drilling High-Manganese Steel

### Sturdy Well-Proportioned Tool Essential—Hole Should Be Drilled Through in One Continuous Cut

**U**SEFUL data on "How to Drill High-Manganese Steel," the difficulties in machining which have retarded materially its wider use, are contained in a booklet issued recently by Whitman & Barnes, Inc., Detroit.

It is pointed out by the author of this booklet, Walter R. Breeler, metallurgical engineer, that until recently this tough wear-resisting steel was considered non-machinable and parts made from it were either cast or forged to shape. Holes to be made in manganese steel parts were either cored, punched or burned-in with a blow torch.

Within the past few years, however, new tool steels, new tool designs and new heat treatments have been perfected. All of these factors, carefully balanced, have produced tools which now successfully cut high-manganese steels and open new fields for their application. One of the latest developments is the Hercules Major drill, made by Whitman & Barnes, Inc., from cobalt high-speed steel of unusual analysis.

Data in the booklet include the following observations: To drill high-manganese steel successfully a sturdy, well-proportioned tool is essential, and the drilling machine must have a positive feed and a speed mechanism powerful enough to drive the drill through. Tremendous pressure is exerted on the tool when cutting. The work must be held securely; if a radial drilling machine is used the work should be placed to assure maximum rigidity of the machine.

If possible, warm the drill point before using, this being good practice to follow for any high-speed steel drill. Some users heat up the manganese steel itself to about 400 to 500 deg. Fahr.; while helpful, this is not absolutely necessary.

The peripheral speed of the drill should be between 12 and 15 ft. per min. The feed should be between 0.003 and 0.010 in. per revolution. A 1-in. drill, for example, gives good service with a feed of 0.006 in. and a speed of 50 r.p.m. Coolant or lubricant should not be used.

The drill should not be permitted to idle or rub when starting a cut, nor after the cut has been started. For best results a hole should be drilled through in one continuous cut. Intermittent cutting, such as produced when a drill is used in a ratchet brace, is not recommended. On the "break through," manganese steel has a tendency to "spin," which is detrimental to the drill. A heavy feed during this period will increase the life of the drill.

#### Deep Hole Drilling Offers Difficulties

Deep hole drilling offers difficulties and materially shortens the life of the tool, due to the excessive heat generated. For example, in drilling a 3½-in. deep hole with a 15/16-in. drill, some users obtain best results by drilling down 2½ in. in one continuous cut and then drilling five or six other holes to the same depth. By the time six holes have been drilled, the metal around the first hole is cool enough to permit the drill to start a new cut and drill 1 in. deeper without heating to the breakdown point. On deep cuts, some users cool the drill point in oil between holes. The practice of starting a new cut in a drilled hole or cooling the drill in oil are exceptions to the general recommendations made above, but in the cases mentioned they have proved practical.

It is economical for the operator to note the condition of the cutting edges and corners as drilling proceeds. If the corners are dull for 1/16 in. to ¼

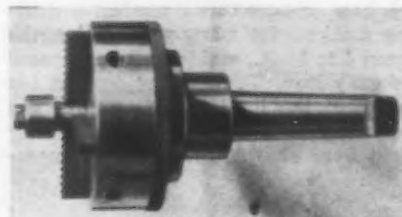
in. back, it is advisable to remove the drill and regrind it, although the tool apparently is cutting satisfactorily. By so doing the maximum number of holes per drill will be obtained, rather than a few more holes per grind.

Hercules Major drills, as received from the factory, are pointed to meet the severest conditions and give the best service. The point angle is 68 deg., the cone angle is 120 deg. and the lip clearance is 6 to 8 deg. To reduce the rake angle and give a stronger cutting edge, a flat section is ground on the lips. This grinding operation also thins the web down to about one-eighth the diameter of the drill. Care must be taken not to blunt the edge so that a negative rake is produced.

#### Compound Spot Facing Tool

**F**OR rapidly and accurately facing small bosses the Mummert-Dixon Co., Hanover, Pa., has designed a spot facing tool having a set of roughing and a set of finishing cutters in the one head.

The roughing cutters have serrated cutting edges which break up the scale on cast iron and steel and rapidly cut the bosses to approximate size. They are movably arranged so that their cutting faces may be set ahead of the finishing cutters. When roughing is completed the roughing cutters may be drawn back so that the finishing cutters project beyond them, ready for the finishing operation. Withdrawal of the roughing cutters is ac-



complished without stopping the machine that drives the head simply by turning the knurled adjusting ring with the hand; turning the adjusting ring in the opposite direction returns the roughing cutters to their working position. The finishing cutters are only required to shave off the serrated surface and do not come in contact with the scale. They remain sharp, and their fixed mounting is said to assure accurate and smooth work.

On the pilot stem at the center of the head may be placed thimbles to suit the size of holes in the boss to be faced. An auxiliary pilot post may be employed when the hole in the boss is rough cored or is too large for the regular pilot. This auxiliary post may be fastened to the drill press table and extended up through the hole in the boss.

These tools are made in four sizes, from 2½ to 6 in. Simple jigs can be furnished for grinding the cutters, one jig serving for both the serrated and the straight cutters.





## Mill for Large Diameter Electrically Welded Pipe

**G**ROWING demand for heavy gage, large diameter welded pipe for use in long distance gasoline and oil pipe lines has given considerable impetus to the development of pipe forming mills. The design of such mills presents several interesting problems, arising partly from the character of the material to be worked, and partly from the requirements which the finished product must meet.

With regard to the former, the material is usually high-carbon steel plate, which, while fairly ductile, does not lend itself particularly well to

deformation at too rapid a rate of speed. This factor is the one that has the greatest influence on the requirements of the finished product, for reasons easily explained.

Welding is done by the automatic arc process, therefore every precaution must be taken to assure proper preparation of the rolled plate, physically and mechanically. In the first place, the distance between the edges must be normally uniform throughout the length of the section. Otherwise the finished weld will be uneven and given to weak spots, very likely to develop into subsequent leaks. Also

the edges must be smooth, free from dents, or waves and of uniform cross section, or they cannot be properly welded. Furthermore, the pipe must be free of locked up stresses that might, and probably would, cause trouble after welding. And, finally, the machine must be designed for a high rate of production.

With these operating and construction problems in mind a new 26-in. pipe forming mill is being built by the Yoder Co., Cleveland. The mill is of the two-high continuous type, comprising 12 stands, and designed to roll pipe with diameters of 18 to 26 in. and gages up to  $\frac{3}{4}$  in. Its rated operating speed is 100 feet per minute.

The 12 stands are individually driven through reduction gears and pinion stands, giving total speed reduction of 50:1 by 40-hp. adjustable constant speed, compound wound, direct current motors. The control is so arranged that there is no variation in relative speed between any of them.

The mill incorporates several decidedly novel and interesting features of design and construction. Among them is its complete use of anti-friction Timken bearings, these being applied on the roll shafts, pinion shafts, the gear and pinion shafts of the gear reduction units, and on all guide and idler roller shafts.

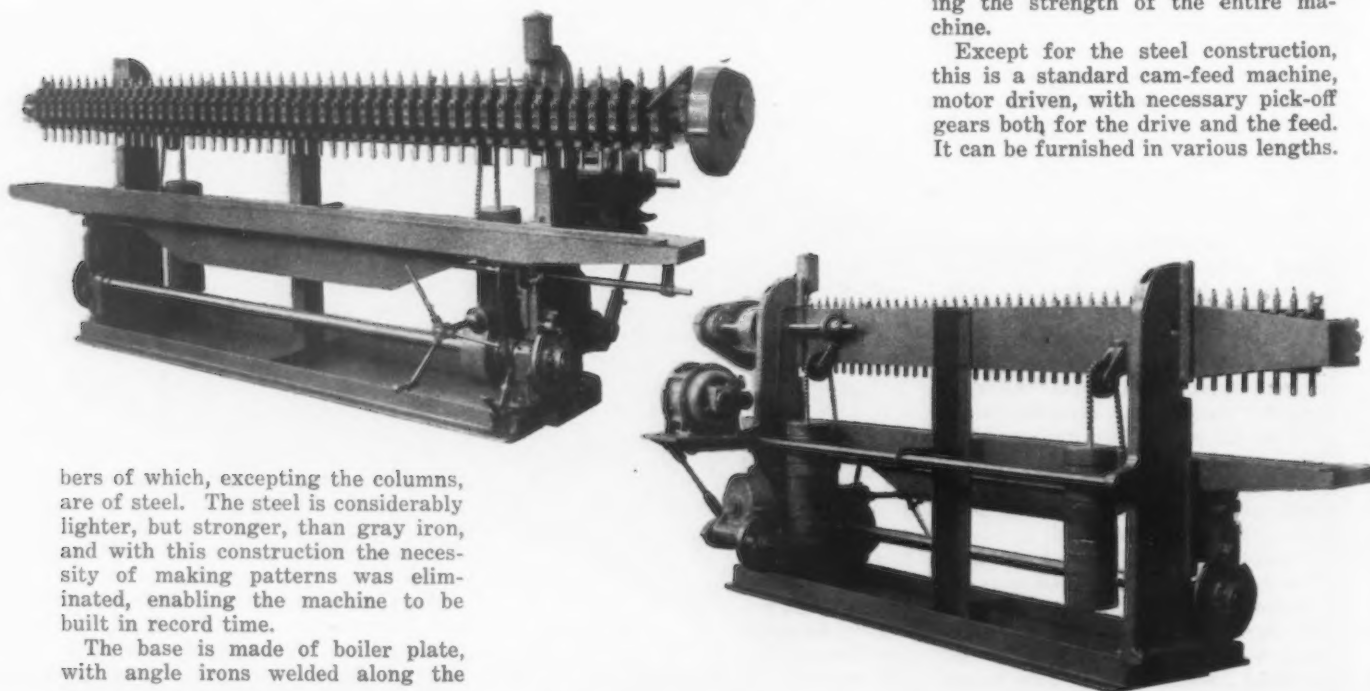
## Built-up Steel Members Feature 49-Spindle Drill

**T**HE Moline Tool Co., Moline, Ill., has manufactured its No. 8 drilling machine for many years in lengths from 4 to 10 ft., making all main parts of gray iron. To meet the demand for a longer but lightweight machine the company is building the 14-ft. long drill here shown, the principal mem-

edges to provide stiffness. Both ends are built up with small box-section pads for bolting the columns. The table is made of an I-beam, the web of which serves as the bottom of the water pan. The ends are closed with plates welded in place, and cross members welded in place furnish pads for

mounting the knee. Cast-iron sections are bolted and welded in the center to provide a T-slotted working face. A rib welded to the bottom of this unit gives the necessary rigidity. The rail, on which are mounted the 49 spindle heads, is constructed of an H-section welded to a large piece of boiler plate. Gray iron castings are fitted into the H-beam and bolted and welded in place. The rail is tied to the base by an angle iron, increasing the strength of the entire machine.

Except for the steel construction, this is a standard cam-feed machine, motor driven, with necessary pick-off gears both for the drive and the feed. It can be furnished in various lengths.



bers of which, excepting the columns, are of steel. The steel is considerably lighter, but stronger, than gray iron, and with this construction the necessity of making patterns was eliminated, enabling the machine to be built in record time.

The base is made of boiler plate, with angle irons welded along the

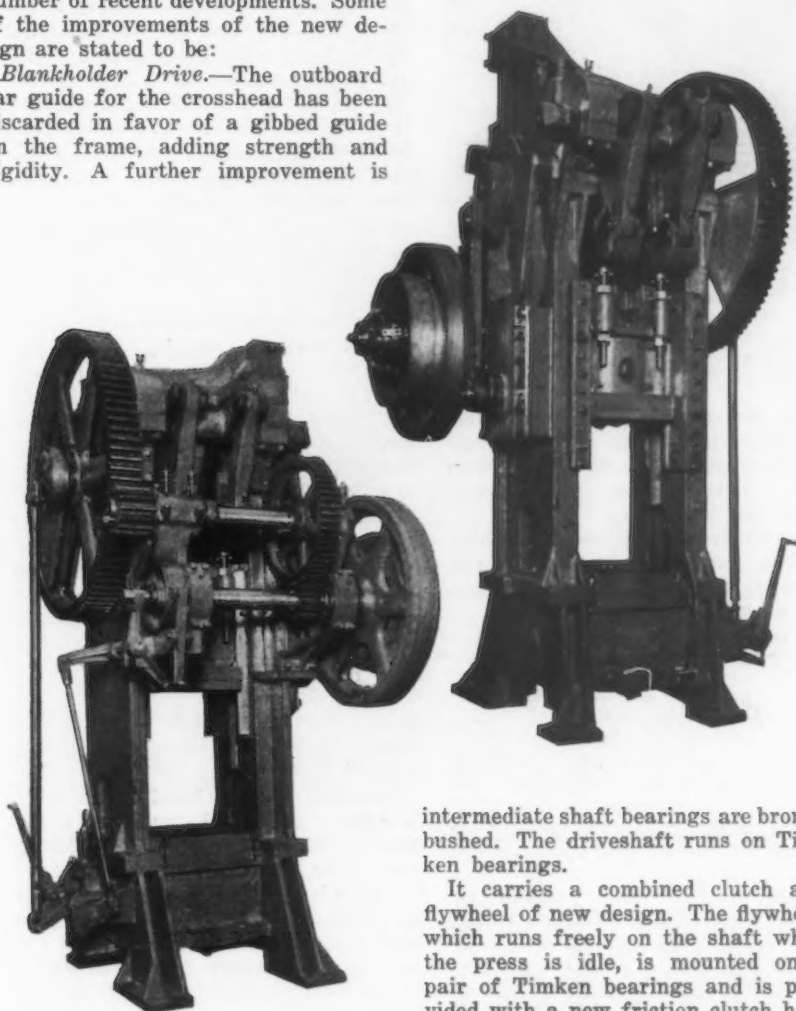


## Single-Crank Toggle Drawing Press

**S**INGLE-CRANK toggle drawing presses Nos. 1½ to 3¼-B, built by E. W. Bliss Co., Brooklyn, N. Y., have been redesigned to include a number of recent developments. Some of the improvements of the new design are stated to be:

**Blankholder Drive.**—The outboard bar guide for the crosshead has been discarded in favor of a gibbed guide on the frame, adding strength and rigidity. A further improvement is

way for die setters at the back of the machine. The shafts and back brackets are heavier and more rigid. The



intermediate shaft bearings are bronze bushed. The driveshaft runs on Timken bearings.

It carries a combined clutch and flywheel of new design. The flywheel, which runs freely on the shaft when the press is idle, is mounted on a pair of Timken bearings and is provided with a new friction clutch having driving disks of steel with interwoven asbestos facing. There are three of these disks, instead of the two in the former type, thus giving increased power and life.

the substitution of a forked arrangement for the overhung pins of the short links. This greatly stiffens the blankholder drive.

**Accessibility.**—In the older models the driveshafts were placed low and close to the frame. While this afforded good stability, their position was such that the die setter found the shaft in his way when setting the rear blankholder nuts. In the new models this objection has been overcome by raising the driveshafts, and the nuts are readily accessible with the slide in any position.

**Control System.**—A full-automatic friction clutch control is built into the right-hand leg of the machine. This device supplies either hand or foot control of the machine without the use of tools or any intermediate strips. When using foot control the handle is stationary, but so arranged that it may be instantly used to stop the press on the way down, should the operator see, after pressing the treadle, that the work has been wrongly placed in the die.

**Drive.**—As noted above, the driveshafts have been raised to clear the

against 18 per cent; and a Brinell hardness of 170-190 as against 110-130.

The new material thus has to a high degree the qualities desirable in sprocket chain material—great toughness to resist extreme tension without permanent stretch, high strength in proportion to weight and size, and hardness that affords great resistance to abrasive wear. The combination of these characteristics in the new metal gives chains made of it their surprising durability, it is stated.

One chain of the new material in a Pennsylvania cement mill, running night and day in an atmosphere saturated with cement dust, has already lasted more than twice as long as the malleable chain used before and shows no evidence of serious wear, it is asserted. In an Ohio plant a chain driving a tumbling barrel has lasted six times as long as the malleable chain it replaced and is still in operation. This particular drive affords a hard test because of the short center distance of 4 ft. between sprocket shafts, the large ratio of reduction (from a 13-tooth driving sprocket to a 78-tooth driven wheel) and an irregular, jerky load.

Promal chains are particularly rec-



ommended for four general classes of service: (1) chain drives, elevators and conveyors operating under gritty or abrasive conditions; (2) chain drives where greater strength is required; (3) drag, scraper and flight conveyors where the chain drags and is subject to abrasion; and (4) heavy duty drives of comparatively high speed, short centers and large sprocket ratios.

### A New Metal for Chains

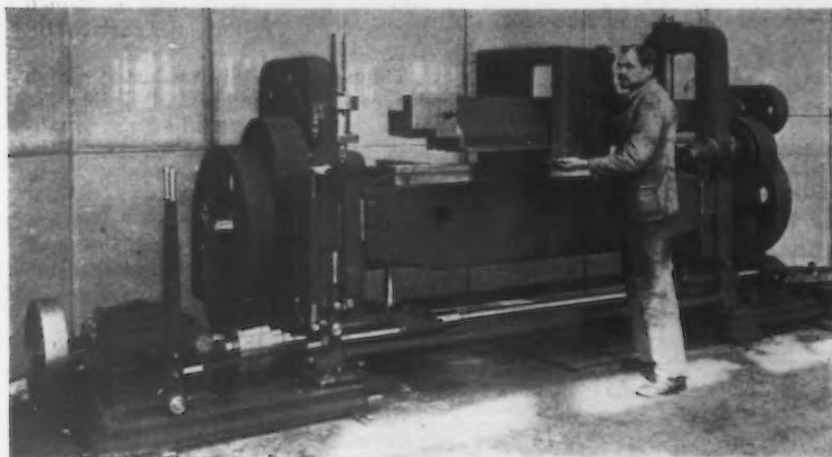
**A** NEW line of cast chains, sold under the registered trade name of Promal, has been placed on the market by Link-Belt Co., Indianapolis.

These chains are the result of extended research to provide longer life for drive and conveyor chains operating under heavy loads or abrasive conditions. Experimentation with cast chain metals, started about four years ago, led to the discovery of a new method of processing malleable iron which so altered its physical characteristics as to make it a distinctly new metal. This fact was recognized by giving it its distinctive name.

Compared with malleable iron, Promal has an average yield point of 45,000 lb. as against 36,000 lb.; an average ultimate strength of 65,000 lb. as against 54,000 lb. per sq. in.; an average elongation of 14 per cent as

A 46-page booklet, entitled "Calcium Molybdate," has been issued by the Climax Molybdenum Co., 295 Madison Avenue, New York. It discusses the preparation of this material which is used for introducing molybdenum into alloy steels, the method of adding it to the steel bath, the alloy recovery, and how to use it in the various steel melting processes.

Granite City Steel Co., Granite City, Ill., has announced a \$500,000 construction and improvement program.



## Brake, Rounding and Box-Forming Machine

**S**HEET metal and plate up to  $\frac{5}{8}$  in. thick may be bent or rounded on the universal brake, rounding and box-forming machines recently placed on the market by the Schatz Mfg. Co., Poughkeepsie, N. Y. These machines can be furnished in widths from 40 in. to 16 ft., and can be had with or with-

out the swing-out top bar which permits withdrawing the closed forms that are bent around it. Boxes with inside or outside flanges can be made rapidly and accurately.

The illustration shows a machine with top clamping bar swung out to permit removal of a closed box

made from one sheet of material.

The high lift of the top bar, the low drop of the bottom bar, both by power, and the far outward adjustment of the folding bar, or bending leaf, are important features. Special rectangular mandrels for sharp bends and round mandrels or rounding blades for radius bending can be inserted between the bars. For rounding and radius bending it is necessary that the folding bar and bottom bar be lowered. The wide opening available accommodates bulky work and work with high flanges. Economies are claimed for the patented system of attaching the blades; when changing blades the removal of screws or bolts is unnecessary.

Both hand and power-operated types of the machine are built. On the power-driven units there is an adjustment for returning the folding bar or bending leaf at any point in the stroke, the upward or downward motion being effected with one engagement of the machine. The top and bottom bars are also adjustable by power. A special safety device prevents too tight clamping of the top bar against the material.

## Wet Grinder for Tungsten-Carbide Tools

**A** NEW machine placed on the market by J. G. Blount Co., Everett, Mass., is a 14-in. wet cup-wheel grinder for fast, easy and efficient grinding of tungsten-carbide tools. It comprises a large spindle running in two long self-oiling, phosphor-bronze bearings. Two types of spindles can be furnished, one to take a 14 x 4 x 5½-in. cup wheel, or one to take a ring chuck and 14 x 4 x 11-in. ring wheel. With either a straight grinding surface is provided, assuring straight sides to angles and rakes of tools.

Pulleys, flanges and disks are machined all over and the spindle assembly built as a unit in perfect bal-

ance. Provision has been made for taking up wear in bearings. The fully inclosing wheel guard is adjustable for wear of the wheel, and specially designed to eliminate splashing. The drive is from a 2-hp., 1800-r.p.m. motor, belted to the spindle. If desired, Texrope or similar types of drive can be supplied. The motor is controlled by an automatic, magnetic starter having overload and low-voltage protection, with a conveniently placed push-button start-and-stop station.

The tool pan is deep to prevent splashing. The column has a large reservoir for water, the reservoir bottom being sufficiently below the pump inlet to accommodate settling of grit. The reservoir can be cleaned out periodically, through a hand hole in the column.

To facilitate easy, rapid grinding with correct angles on rakes and clearances of tools, an adjustable table is provided. The table is arranged to give angles in two different planes with respect to the wheel, while the third angle is obtained by a sliding protractor guide against which the tool is held in grinding. The protractor guide slides in planed ways in the hardened steel table top. The table as a whole has vertical adjustment to permit grinding various sizes of

tools. To accommodate wear of the wheel, there is horizontal adjustment as well.

Grinding is free hand. The table is quickly set at the required angle and the tool, held against the sliding protractor, is guided across the face of the wheel. The free hand method of holding the tool is found to absorb the shocks of grinding and assure the keen, sharp edge so essential to the best performance of tungsten-carbide tools.

Cooling is gained by the friction-driven centrifugal pump, which supplies a large volume of water under high velocity, directed to keep the wheel face clean at all times. A secondary nozzle at top of the guard provides an additional stream of water at the point of grinding, when necessary. Burning, checking and cracking of tools are thus prevented and the grinding is speeded up, while at the same time the objectionable dust from wheels is eliminated.

The machine weighs about 1000 lb.

## General-Purpose Arc-Welding Wire

**F**OR general welding operations where medium ductility is required, the Wilson Welder & Metals Co., Inc., North Bergen, N. J., is now offering arc-welding wire known as the Wilson Red Processed. This wire is said to combine fast and smooth flowing quality with good penetration, and to produce a weld having a tensile strength of 50,000 lb. per sq. in., and more. It is supplied in 50-lb. bundles.



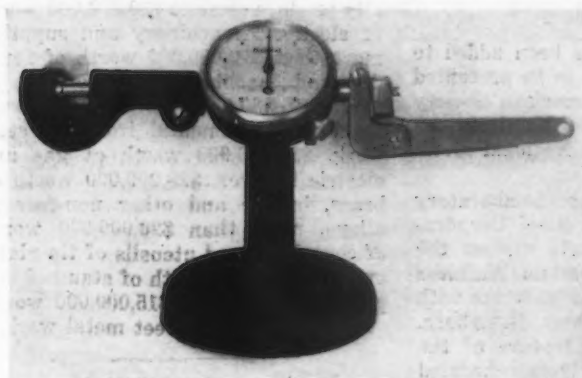


## Indicates Size Variations of Wire to 0.0001 In.

FOR measuring all kinds of small wire to tolerances of 0.0001 in., the Federal Products Corporation, Providence, R. I., is offering an indicating gage designated as model 341.

This gage is of bench type and has

in line of direct vision of the operator taking the readings. The small metal piece shown on the back of the anvils is a guide so that when the wire is drawn through it will always be in the center of the anvils.



**B**ENCH Indicating Gage for Wire. Operation of the anvil lever may be by hand or foot

a lever arrangement that can be operated either by hand or by foot. For the latter a small wire or string is put through the hole at the end of the lever and passed through the bench to a foot pedal. The indicator has 0.0001-in. graduations, and each numeral on the dial represents 0.001 in. It can be swiveled on the bracket

In using the instrument the operator pulls the lever down, which opens the anvils, draws the wire through and then takes readings at the desired points on the wire.

The frame and the anvil-carrying block are finished in black, all other exposed parts, including the rack of the indicator, are chromium plated.

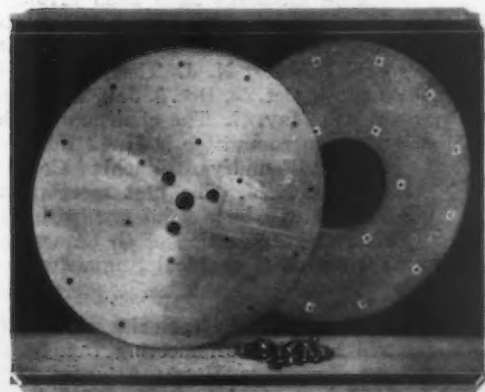
## Grinding Disk Is Detachable from Backing Plate

FOR use on disk grinders, the Covell-Hanchett Co., Big Rapids, Mich., is placing on the market the Hanchett Red Anchor disk illustrated, a feature of which is the patented method of employing anchor nuts for securely attaching thick disks to the metal backing plates.

A number of  $\frac{3}{8}$ -in. anchor nuts are molded into one side of the grinding disk during manufacture. These nuts are accurately spaced to match drilled holes in the steel disk plates. The grinding disk is then attached to the steel plate by standard  $\frac{3}{8}$ -in. cap screws and lock washers. It is straight and flush on both sides, and may be used for wet or dry grinding.

This method of attaching permits supplying Bakelite, silicate or vitrified disk wheels. The disks are made of specially prepared grains in all numbers, both silicon carbide for gray iron and brass and aluminous for steel and malleable iron. A wide variety of grades are obtainable for different materials.

With this construction the wheel presses and cement commonly used for attaching the  $\frac{1}{4}$  or  $\frac{3}{8}$ -in. grinding disks are not required. There are no backing plates to buy or lease, and plates are not returned for refilling. When the disk is worn down to the nuts, the cap screws are removed and a new disk attached. A series of tests



**T**HE Anchor Nuts Are Molded Into One Side of the Grinding Disk During Manufacture. The disk is attached to the backing plate by standard cap screws and lock washers

and trials in the company's plant for a number of years is said to have shown that these grinding disks will neither break nor fly off. Every disk is tested before shipment at a cutting speed 50 per cent greater than normal.

## Woven-Wire Screens of Spring Steel

**S**PRING-STEEL woven-wire screens are announced as a new development by the Ludlow-Saylor Wire Co., St. Louis. Spring-Steel is a hard, resilient alloy for severe service on revolving-screen jackets, vibrating-screen sections, and shaking and gravity screening surfaces.

Woven-wire screens of this material are said to wear several times as long as the same grades made of ordinary steel. The first installation, made four years ago, is reported still



in service. This consists of two cylindrical outside jackets on a revolving screen handling crushed limestone. These jackets have been used continuously since their installation, and the operator reports they still look good.

Spring-Steel has been thoroughly tested on various types of vibrating screens: on copper ore in Arizona—on lead-zinc ore in Missouri—on by-product coke in New Jersey—on crushed stone and gravel throughout the country. These new Spring-Steel screens can be furnished in all grades required for heavy sizing duty.

American Refractories Institute, Oliver Building, Pittsburgh, has published the eighth edition of its directory of refractories, which lists every known manufacturer of fire brick in the United States and Canada, together with the brand names of their products. Copies may be obtained from the institute at 25c. each.

An increase of 20 per cent in production of light delivery trucks during the first half of this year over the same period in 1929 is announced today by Sidney Corbett, manager of the commercial car division of the Chevrolet Motor Co. Figures for the comparable periods were 27,236 units as against 22,613 to July 1, last year.



## A. S. M. E. Completes Metal Week Program

Eighteen or more papers will be presented at the eight technical sessions arranged by the machine shop practice and the iron and steel divisions of the American Society of Mechanical Engineers for the meeting to be held at Hotel Stevens, Chicago, Sept. 23-26, during the National Metal Exposition. Plant inspection trips arranged for each morning will be open to all of the societies participating in National Metal Week. A joint dinner of the machine shop practice and the iron and steel divisions and the Chicago section of the A.S.M.E. is planned for Wednesday evening, Sept. 24. The technical program is as follows:

### Tuesday, Sept. 23

**Phenol Materials Session (2 p. m.):** Phenol Resinoid Molding Technique (consideration of engineering factors involved in the replacement of metals by synthetic plastics), by Leon V. Quigley, technical editor, Bakelite Co., New York; and Production of Plastic Telephone Parts, by A. M. Lynn, Western Electric Co., Chicago.

**Machine Tool Motor Session (8 p. m.):** Flange Type Motor Mounting, by Herbert Chase, McGraw-Hill Publishing Co., New York; and Mechanical Design of Electric Motors, as regards Standardization and Interchangeability, by J. L. Browne, Westinghouse Electric & Mfg. Co., East Pittsburgh.

### Wednesday, Sept. 24

**Polishing and Repairing Session (10 a. m.):** Automatic Polishing, by Robert T. Kent, Devine Brothers, Utica, N. Y.; and Repair of Worn Parts by Electro Deposition of Iron, by T. P. Thomas, Westinghouse Electric & Mfg. Co.

**Nitriding Session (2 p. m.):** Case-Hardening with Ammonia Gas, by Dr. V. O. Homerberg and Dr. J. P. Walsted, Massachusetts Institute of Technology, Cambridge, Mass.; and Nitriding Analyses—their Physical Properties and Adaptability, by R. Sergeson and M. M. Clark, metallurgical department, Central Alloy Steel Co., Canton, Ohio.

### Thursday, Sept. 25

**Iron and Steel Session (10 a. m.):** Report of Anti Friction Heavy-Duty Bearing Committee; General Design and Construction of Hot Saws for Cutting Heavy Structural Steel Sections, by A. B. Pearson, Carnegie Steel Co., Munhall, Pa.

**Iron and Steel Session (2 p. m.):** Manufacture of Large Weldless Forged Steel Pressure Vessels, by J. L. Cox, assistant to president, Midvale Co., Nicetown, Philadelphia; Manufacture of Large Welded Pipe, by Leon Cammen, consulting engineer, New York; and Straightening of Steel by Rolling, by J. Blair Sutton, Sutton Engineering Co., Pittsburgh.

### Friday, Sept. 26

**Furnace Session (10 a. m.):** Application of Metallic Recuperators to Industrial Furnaces, by G. W. Mantle, manager Mantle recuperator division, Surface Combustion Co., Pittsburgh; Continuous Reheating Furnaces for Rolling Mills, by A. L. Culbertson, manager, furnace division, Rust Engineering Co., Pittsburgh; and Manual Semi-Automatic and Automatic Devices for the Protection Against Wind of Ore Bridges and Similar Structures, by C. O. Burton, Minnesota Steel Co., Duluth, Minn.

**Combustion Session (2 p. m.):** Notes on the Production, Purification and Uses of Blast Furnace Gases, by W. A. Haven, Arthur G. McKee Co., Cleveland; and Combustion of Gas in Blast Furnace Stoves, by H. W. Paret, Jr., burner department, Swindell-Dressler Co., Pittsburgh.

## Steel Treaters' Program Is Expanded

Several papers have been added to the technical program to be presented to members of the American Society for Steel Treating at the Hotel Stevens in Chicago during the National Metal Congress, Sept. 22-26.

Edgar C. Bain, research laboratory of the United States Steel Corporation, Kearny, N. J., will discuss the nature of nickel-chromium stainless steels in a paper which he wrote with the assistance of Robert H. Aborn. This paper will be a feature of the session on stainless steels scheduled for Thursday morning, Sept. 25.

C. H. Bierbaum, vice-president and construction engineer of the Lumen Bearing Co., Buffalo, is on the program to describe a new microhardness tester which he uses to show the comparative hardness of the microconstituents of metals. As a part of the session on melting, listed for the afternoon of Sept. 25, H. H. Ashdown, consulting metallurgist, Irvine, Pa., will discuss the various types of steel ingots and the effect of mold design upon steel.

## New Officers of Testing Society's Committees

Several changes have recently been made in the officers of important committees of the American Society for Testing Materials:

A. L. Boegehold, metallurgist, research department, General Motors Corporation, Detroit, has been elected vice-chairman and W. H. Rother, metallurgist, Buffalo Foundry & Machine Co., Buffalo, has been elected secretary of committee A-3 on cast iron.

H. D. Newell, chief metallurgist, Babcock & Wilcox Tube Co., Beaver Falls, Pa., has been elected secretary of Committee A-10 on iron-chromium, iron-chromium-nickel and related alloys.

H. A. Anderson, metallurgical development engineer, Western Electric Co., Chicago, has been elected chairman, D. L. Colwell, metallurgist, Stewart Die Casting Corporation, Chicago, has been elected vice-chairman, and P. V. Faragher, metallurgist, Aluminum Co. of America, Pittsburgh, has been elected secretary of committee B-6 on die-cast metals and alloys.

V. Skillman, metallurgist, Bohn Aluminum & Brass Corporation, Detroit, has been elected vice-chairman of committee B-7 on light metals and alloys, cast and wrought.

C. H. Davis, assistant metallurgist, American Brass Co., Waterbury, Conn., has been elected chairman, and O. E. Harder, assistant director, Battelle Memorial Institute, Columbus, Ohio, has been elected secretary of committee E-4 on metallography.

## New York as Metal-Working Center Exploited

A half million copies of a booklet on the various industries of New York, published by the Merchants Association of New York, is being distributed throughout the United States. According to the latest census of manufactures, New York factories annually produce close to \$90,000,000 worth of electrical machinery and supplies, more than \$70,000,000 worth of foundry and machine shop products, in excess of \$30,000,000 worth of structural and ornamental iron and steel work, \$30,000,000 worth of gas and electric fixtures, \$28,000,000 worth of brass, bronze and other non-ferrous alloys, more than \$20,000,000 worth of containers and utensils of tin plate, over \$20,000,000 worth of stamped and enameled ware and \$15,000,000 worth of copper, tin and sheet metal work.

## Trade Association Group to Meet Sept. 24-27

American Trade Association Executives, an organization of secretaries and managers of the leading trade associations of the United States, will hold its eleventh annual convention at the Clifton House, Niagara Falls, Ont., Sept. 24 to 27. The general session of Sept. 24 will be opened by Alfred Reeves, secretary and manager of the National Automobile Chamber of Commerce, whose subject will be "Facts, the Basis for Business Improvement."

The feature of the convention will be several group luncheons to discuss the topic "What Is Ahead Tomorrow?" The group meeting representing the construction members will be presided over by Charles F. Abbott of the American Institute of Steel Construction and that of the machinery and equipment industries will have as its chairman Ernest F. DuBrul of the National Machine Tool Builders' Association.

A program of plant visits is scheduled, and there will be special illumination of Niagara Falls for the entertainment of the convention attendants.

## Newark Foundrymen Plan Season's Meetings

Five meetings have been arranged for the coming season of 1930-31 by the Newark Foundrymen's Association, Newark, N. J. They are scheduled for Oct. 22, Dec. 3, Jan. 28, March 25 and May 27. The chairman of the program committee is H. L. Edinger, Barnett Foundry & Machine Co., Irvington, N. J. The first meeting on Oct. 22 will be a joint one with the Metropolitan section of the American Society of Mechanical Engineers.

American Refractories Institute will hold its fall meeting Oct. 24 at the Traymore Hotel, Atlantic City, N. J.

# PERSONALS

FRED GRIFFITHS, manager of roll sales for the Mackintosh-Hemphill Co., Pittsburgh, has joined the roll sales department of the Duquesne Steel Foundry Co., Coraopolis, Pa., succeeding H. A. LOMAX, who recently was appointed general manager of the Wheeling Mold & Foundry Co., Wheeling, W. Va. Mr. Griffiths has been identified with the steel roll and foundry business for more than 30 years, having been identified with the old A. Garrison Foundry Co., South Side, Pittsburgh, prior to its absorption by the Mackintosh-Hemphill Co. a few years ago. Mr. Griffiths has been succeeded at the Mackintosh-Hemphill Co. by J. R. PATTERSON, who has been in charge of Adamite sales for that company. Before going with the latter company, Mr. Patterson was identified with the old Pittsburgh Iron & Steel Foundries Co., Pittsburgh.

WALTER KNEELAND, for several years associated with the United Engineering & Foundry Co., and more recently with the Youngstown Foundry & Machine Co., Youngstown, has joined the roll sales department of the Wheeling Mold & Foundry Co., Wheeling, W. Va.

FRED T. WHITING has been appointed assistant manager of the Northwestern district of the Westinghouse Electric & Mfg. Co., East Pittsburgh, and will work under the supervision of N. G. SYMONDS, commercial vice-president, with headquarters at Chicago. Mr. Whiting was graduated from Iowa State College in 1913 and has been identified with the Westinghouse company continuously since that time. Recently he has been industrial manager of the Northwestern district, with headquarters in Chicago.

A. R. SMITH has been appointed executive engineer of the turbine engineering department of the General Electric Co. to succeed the late William J. Delles. Mr. Smith will retain his responsibility as engineer of the construction engineering department. He has been with the company since 1897, and with the construction engineering department since 1908.

WILLIAM BASTABLE, who has been gaged in handling the sales and service of welding equipment for the Wilson Welder & Metals Co., has been appointed distributor for welding equipment and accessories for the Manhattan district for the USL Battery Corporation, Niagara Falls, N. Y. He has opened an office at 505 Fifth Avenue, New York.

SHIRLEY S. FRENCH and J. S. SPROTT have become associated with Lyon Metal Products, Inc., Aurora, Ill. Mr. French will be in general charge of a new division of that company which will manufacture and



S. S. French



J. S. Sprott

market a new line of products to be announced in the near future. Mr. Sprott will be in charge of sales of the new division. For a number of years Mr. French was president of the Berger Mfg. Co., Canton, Ohio, and vice-president of the Central Alloy Steel Corporation. Mr. Sprott was general manager of sales, Berger Mfg. Co., following 15 years with the General Fireproofing Co.

H. S. BARTHOLOMEW, formerly of the firm of Cooley & Marvin, cost engineers, Boston, has been appointed directing head in a consulting capacity of the newly-created cost engineering department of the Steel Founders' Society of America, Graybar Building, New York.

THOMAS F. McLAUGHLIN, recently identified with the Halcomb Steel Co., Syracuse, N. Y., has been appointed general works manager of the Rustless Iron Corporation of America, Baltimore. G. H. WEBB, who was formerly assistant district manager at New York in the stainless steel division of the Central Alloy Steel Corporation, has been added to the sales promotion department of the Rustless Iron company.

WILLIAM PIEZ, brother of CHARLES PIEZ, chairman, Link-Belt Co., Chicago, has been appointed European correspondent of that company, with headquarters at 43 Boulevard Raspail, Paris, France. He was formerly district sales manager of the Concrete Steel Co. in Chicago.

NEIL OTEY, formerly with the Poole Engineering & Machine Co., Baltimore, has been appointed district manager of the company's Pittsburgh office.

F. A. RUMBARGER has been made the Pittsburgh representative, with office in the Koppers Building, for the Browning Crane Co., Cleveland.

J. H. VAN CAMPEN, formerly chief engineer of the Warren works of the Republic Iron & Steel Co., has been appointed chief engineer of both the Youngstown and Warren districts of the Republic Steel Corporation.

F. J. CONDIT, who has been identified with the main office of the Hevi Duty Electric Co., Milwaukee, has been made resident engineer of the company's office in Buffalo.

PERCIVAL H. SEWARD, of the American Radiator Co., New York, has returned from a three-months sojourn in England.

HOWARD C. McNEIL, vice-president, Illinois Iron & Bolt Co., Carpentersville, Ill., has been elected president of the company to succeed JOHN F. FIERKE, who has been elected chairman of the board. H. A. RICE, second vice-president, has been elected first vice-president to succeed Mr. McNeil.

L. L. WARRINER, general manager of factories of Fairbanks, Morse & Co., has tendered his resignation to take effect Jan. 1 when he will become active as vice-president and a director of the Master Electric Co., Dayton, manufacturer of motors, exercisers, refrigeration, etc. He will have complete charge of manufactur-



ing. Mr. Warriner joined Fairbanks-Morse in its engineering department at the main works in Beloit, Wis., in 1917. Three years later he was made manager of the Beloit works, and four years ago placed in charge of all manufacturing, including supervision of plants at Beloit, Three Rivers, Mich., and Indianapolis.

JAMES L. WILLIAMS has been appointed general manager of sales, Taylor-Wilson Mfg. Co., Pittsburgh, maker of seamless and welded pipe and tube mill equipment. Following his graduation from Carnegie Institute of Technology in 1911, he spent several years in the engineering departments of the National Tube Co.,



J. L. Williams

the Standard Seamless Tube Co. and the Pittsburgh Seamless Tube Co. These connections were followed by four years with the Standard Engineering Co., Ellwood City, Pa., which specializes in the building of seamless tube mills. Leaving that company, he joined the A. Garrison Foundry Co., Pittsburgh, which was merged with the Pittsburgh Iron & Steel Foundries Co. and later became part of the present Mackintosh-Hemphill Co. Mr. Williams was with the Garrison company for 11 years.

W. A. IRVIN, vice-president in charge of operations, American Sheet & Tin Plate Co., Pittsburgh, has returned from a short vacation in Europe.

F. W. WERNER, chief chemist of the Central laboratory of the Joliet works of the Illinois Steel Co., has been transferred to the New York office of the United States Steel Corporation. He is being succeeded by ERNEST JOHNSTON, who has been assistant chief chemist at the Central laboratory.

## Additions to Battelle Institute's Staff

C. H. Lorig has joined the technical staff of Battelle Memorial Institute, Columbus, Ohio, where he will study foundry and general metallurgical problems. He came directly from Drexel Institute, where he was professor of mechanical engineering in charge of their metallurgical courses. He has had previous experience with the Wisconsin Steel Co., Wisconsin Appleton Co., French Battery Co., Laddish Drop Forge Co., and the University of Wisconsin, where he was engaged in engineering research and where he received undergraduate and graduate degrees.

Samuel Epstein has resigned his position as research metallurgist for the Illinois Steel Co. to accept a position as metallurgist at Battelle Memorial Institute, where he will be in charge of a research on the embrittlement of steel. Mr. Epstein is a graduate of the College of the City of New York and has taken graduate work in George Washington University and in the University of Chicago. Mr. Epstein was in the United States Bureau of Standards for 11 years, where he had a wide field of research experience in metallography.

Leland H. Grenell has joined the Battelle research staff and has been assigned to a sponsored research on the production and utilization of metal foils. Mr. Grenell is a graduate of Pennsylvania State College, and has held positions with the Ingersoll-Rand Co., Bureau of Mines, Bureau of Standards and the Frigidaire Corporation. His special interests have been in stainless steels, silver solders, corruptions and materials specifications.

## Stevens Offers Graduate Engineering Course

Stevens Institute of Technology in the academic year 1930-1931 will include in its curriculum, for the first time, courses for graduate students. Since the inauguration of President Harvey N. Davis a faculty committee has been investigating the field of graduate instruction. Following the recommendation of this committee, the trustees and faculty have approved a program of graduate courses leading to the degree of master of science.

Graduate instruction is given during the day in the fields of electrical, mechanical and civil engineering and in business administration. Research projects in the properties of steam, smoke abatement and the measurement of engineering aptitudes are now in progress.

Dr. William A. Shewhart, of the technical staff of the Bell Telephone Laboratories, Inc., will give a special course as a part of the new program of graduate instruction on Tuesdays

and Thursdays from 4 to 5:30 p. m., beginning on Sept. 23.

Entitled "Statistical Theories and Methods Applicable to the Economic Control of Quality in Manufactured Products," the course will deal with the theory of statistics: application of modern statistical theory to the analysis, interpretation and presentation of data, to the planning of physical investigations, to the development of economical production and inspection methods, and to the establishment of standards for quality. Study will be given also to criteria of sampling.

## Obituary

JAMES CAREY DAVIS, advisory operating vice-president of the American Steel Foundries, died Aug. 10 while at his summer home on Mackinac Island. He was born 65 years ago at Jamestown, N. Y. For 17 years he was associated with the Sargent Co. in various capacities. In 1896 he became general superintendent of operations of that company, and held that position until 1901 when he accepted a similar position with the Leighton & Howard Steel Co., St. Louis, which he remained until it was absorbed in 1902 by the American Steel Foundries. The American Steel Foundries appointed him western district manager and in 1905 he was transferred to Chicago as assistant to the first vice-president, R. P. Lamont. In 1912 he was elected fourth vice-president in charge of foundry operations and in 1929 he was made advisory operating vice-president, which position he held at the time of his death.

DORR E. FELT, president, Felt & Tarrant Mfg. Co., Chicago, a former president of the Illinois Manufacturers' Association and inventor of the comptometer, died on Aug. 7. He invented a key-operated calculating machine and a practical adding and listing machine. His first model was made in 1882, two years before he went to Chicago from Beloit, Wis. He served as the regional advisor for a section of the War Industries Board in 1918 and was a member of the Employers' Commission in 1919.

FRANK KINSEY, president, American Key Can Co., and inventor of and key opener, died Aug. 6, at the Hotel Windermere, Chicago. He was 82 years old. He went to Chicago in 1892, later organizing the company of which he became president in 1901.

"Relationships Between Rockwell and Brinell Numbers" is the title of research paper No. 135, issued by the Bureau of Standards. The author of its 50 pages is S. N. Petrenko.



## Metals Section Completes Safety Congress Program

Formal papers, addresses and committee reports, round table discussions, an educational playlet and a film, the election of officers and the award of trophies make up the program arranged by the metals section of the National Safety Council for the nineteenth annual Safety Congress in Pittsburgh, Sept. 29 to Oct. 3. One session will be devoted to safety in the foundry. The metals section program is as follows:

### Sept. 30 (9:30 a.m.)

Report of Officers and Committees.

Address (to be announced).

Metals Section Accident Statistics for the Year 1929, E. R. Rose, safety director Republic Steel Corporation, Youngstown.

Analysis of the Causes of Accidents in the Metals Industry, W. Graham Cole, director Safety Service, Policyholders' Service Bureau, Metropolitan Life Insurance Co., New York.

### Oct. 1 (9:30 a.m.)

The Foreman as a Safety Factor in Production, F. J. O'Connor, welfare superintendent E. I. du Pont de Nemours & Co., Pennsgrove, N. J.

Safety in the Erection of Steel, W. A. Hazard, superintendent of erection Bethlehem Steel Co., Bethlehem, Pa.

The Machine Age and Its Relation to Accident Prevention, Dr. R. H. Lansburgh, First National Bank, Detroit.

### Oct. 1 (2:00 p.m.) Foundry Session

Chairman: F. G. Bennett, safety director Buckeye Steel Castings Co., Columbus, Ohio.

Address, F. G. Bennett, chairman Foundry Research Committee.

Foundry Engineering and Safety, J. W. Beall, insurance commissioner Ohio Steel Foundry Co., Lima, Ohio.

Personal Protective Devices for the Foundry Worker (Hand, Foot and Head Protection), S. W. Doran, personal superintendent Pratt & Letchworth Co., Buffalo.

Round-Table Discussion of Foundry

Hazards. Led by W. E. Watters, safety engineer National Malleable & Steel Castings Co., Chicago.

### Oct. 2 (2 p.m.)

Award of Metals Section Trophies, C. E. Pettibone, president National Safety Council.

Report of Safe Practices Committee, J. M. Woltz, safety director Youngstown Sheet & Tube Co., Youngstown, Ohio.

The Quitter—a playlet written by M. D. Conroy. Produced by School of Drama, Carnegie Institute of Technology, Pittsburgh.

Safety Kinks in the Metals Industry (a film strip), John A. Oartel, chief of safety bureau Carnegie Steel Co., Pittsburgh.

General round-table discussion.

## Employee Representation in Pump Company

Cooperation of the wage earner in management has been arranged by the Yeoman Brothers Co., Chicago, maker of pumps. Monthly meetings are held between the representatives of the shop employees and the management. The employees' group includes the chairman of the shop committee and operatives selected by the men from the different departments of the plant. The management is represented by the vice-president and general manager, D. W. Burgoon, the production manager, the purchasing agent, chief engineer, the foreman in charge of production, and the foreman in charge of manufacturing and machines. A secretary is provided to keep a record of the meetings.

In the first conference 16 topics were presented for discussion. Among those accepted was one providing for an improved electric motor arrangement that is expected to result in an important saving of power, and another covered improvements for testing equipment that will speed up operations and effect an important time saving.

## Purchasing Executives to Meet in Pittsburgh

A meeting of the executive committee of the National Association of Purchasing Agents will be held in conjunction with the sixth district convention of the National association at Pittsburgh on Oct. 16 and 17.

Headed by the national president, Joseph E. Mills, purchasing agent for the city of Detroit, and George Renard, secretary of the national association, this committee will confer with delegates in reference to national conditions and problems.

Frank H. MacKnight, Westinghouse Air Brake Co., represents the sixth district on this committee. R. W. Mackensen, Pittsburgh Coal Co., is in charge of convention arrangements.

## New Jersey Steel Treaters to Have Field Day

Members of the New Jersey chapter of the American Society for Steel Treating will hold their first annual outing Saturday, Aug. 23, at Doerr's Park, Northfield, N. J. An all-day affair is planned, including athletic events for which prizes will be given. A dinner will be served. Tickets are \$3 and reservations must be made on or before Aug. 19.

Babcock & Wilcox No. 80 refractory cements and plastics are now being exclusively distributed in the Chicago territory by Mayer & Oswald, Inc., 332 South LaSalle Street, that city.

Republic Steel Corporation has opened a subdistrict sales office in the First Wisconsin National Bank Building, Milwaukee, in charge of N. E. Nelson.

**BATTLEDECK** flooring, one of the newer uses for steel plates, which is being widely advocated by the American Institute of Steel Construction, is being laid in the Berkshire Garage, Pittsfield, Mass. The floor area is approximately 8500 sq. ft. The steel plates are  $\frac{1}{4}$  in. thick, 24 in. wide, welded to 5 in. I-beams,

the average span being 20 ft. There will be no covering on the steel plates. The structural steel for the building was fabricated and electrically welded by the Haarmann Steel Co., Holyoke, Mass., and General Electric Co. welding equipment was used throughout the work.



W. W. MACON  
Editor

# THE IRON AGE

A. I. FINDLEY  
Editor Emeritus

ESTABLISHED 1855

## "The Iron Age's" Service in 1930

WITH one variation, this sentence appeared in an editorial in THE IRON AGE of one week ago:

In the first six months of 1930, when business in the industry represented by this journal was declining, our expenditure for editorial and contributed articles was greater than in any other half-year in our history.

By an inscrutable error, such as is sometimes attributed to the perversity of the types, the half-year as printed last week was assigned to 1929. If there be mitigation, we shall find it in the opportunity to say here again that the time when men in industry are forced to think most deeply on their problems is the time, we believe, when their business paper should not only maintain its service to them but, if possible, increase it beyond the ordinary.

## Tariff Fact and Fiction

NOW that the Hawley-Smoot tariff has been well retired from daily paper front pages, it is not surprising that some returning travelers report that they did not find, to the extent that they expected, that Europeans are consumed with hard feelings against the United States because of the new act. Nor is it surprising that the recent conference of European countries for the limitation of automobile imports from this country ended without agreeing on any such program to that end as cable headlines had been promising. Yet for months we had been hearing that the first concern of European business was how it could deal the hardest blow to American trade, in view of our tariff revision. It is being demonstrated again that with the possible exception of prohibition the tariff has no rival as the public question on which so much that is printed is fathered by the wish to have it so.

Just before the passage of the new tariff we commented on the fact that the thirty and odd advance protests sent to Washington by various foreign governments were matched by 31 similar protests that reached Washington in advance of the passage of the Fordney-McCumber bill eight years ago. And in all these latter it was vehemently said that our trade with each particular country would suffer irreparably. Yet our business with all of them, both import and export, increased materially in the years following 1922.

And now the Westminster Bank of London, in its monthly financial bulletin, takes the view that next to our over-stimulation of installment buying, which it

finds to have maintained American consumption of non-essentials at an unjustifiably high level, the main factor in the present depression in the United States, and one that makes its duration uncertain, is

the choice of this moment, when the country is suffering from overproduction and a rapidly growing need for exporting her surplus, for an all-round and substantial heightening of the tariff wall.

The fact is that there has been no "all-round and substantial heightening of the tariff wall," in spite of the world-wide circulation of this and similar statements ever since the new tariff bill came up for discussion in the extra session. On the contrary, it made fewer changes in duties and less striking ones than any of its predecessors. Yet so many reckless assertions are made at home about the building of high walls against European products that the author of the Westminster Bank's review had ample American basis for his charge. It is time the anti-tariff writers at home and abroad explained how our customs duties prevent foreign countries from selling to us when two-thirds of our imports come in duty free. In the first five months of 1930, out of a total of \$1,485,600,000 of imports to the United States, only \$505,400,000 worth, or 34 per cent, was dutiable.

Doubtless the decrease in our imports which has resulted from the present depression in business will bring further complaints against the new tariff.

## Reactions to "Unfilled Orders"

EVERY line of human activity has its philosophy and language. Wall Street has one, the steel trade has another, the politicians another, and so on. Members of the steel trade are frequently amused at Wall Street's reactions to the monthly announcement by the United States Steel Corporation of what Wall Street calls "unfilled orders." In steel trade language the word would be "obligations." A neat straddle, to use a common language, is to say "tonnage." Obligations have to be specified before they become shipping orders, and the money to pay dividends as well as wages comes only after shipment has been made.

Yet Wall Street will show some enthusiasm when an increase in the "unfilled" may be the result of a decrease in steel shipments. To be sure, there is something in the Wall Street philosophy of regarding such a tonnage statement as favorable. A decrease in shipments is already known or surmised; hence it is assumed to have been discounted if only five minutes have elapsed; but the unfilled tonnage statement is



future, and the expected increase in shipments is farther in the future.

The last unfilled tonnage statement of the Steel Corporation, showing 53,991 tons increase in July, furnishes a good illustration of how complicated the matter really is. In the first place, there are certain seasonal variations. Rail orders late in a year tend to swell the statement while subsequent shipments tend to lower it, without these changes really reflecting anything as to fluctuations in the general state of trade. The month before a new quarter should show an increase, from quarterly contracts, while the next two months are unfavorably affected.

If one should endeavor to determine what is "normal" for July by consulting precedents he would be greatly confused. In the last seven years July has shown a decrease five times and an increase twice, hence this year's July increase might be considered particularly promising, but there is the very awkward fact that one of the two years showing a July increase was 1927, with 88,768 tons, and the general poorness of the second half of 1927 is well established, while 1928 had a particularly good second half, relative to the first half, and its July showed 66,082 tons decrease.

It is the longer range swings that are significant. Changes in the unfilled obligations represent a net balance between two large quantities. The Steel Corporation's capacity, in products in the various forms in which sold, is approximately 17,700,000 tons per annum, 1,475,000 tons per month or 56,900 tons per working day, counting 311 steel mill days in the year. At no more than a 68 per cent operation, there is a million tons output a month and a 50,000-ton difference between "bookings" and "shipments" is only 5 per cent. Easily a few special orders can swell the one or heavy shipments on orders not immediately replaced can swell the other.

### Materials for Blast Furnaces

THE annual statistical report of the American Iron and Steel Institute just issued contains the usual information for 1929 in addition to the production statistics previously issued in the three successive bulletins. One of the interesting items is material consumed by blast furnaces in the manufacture of pig iron. Consumption of ore, briquettes, etc., averaged 1.750 gross tons and of cinder, scale, scrap, etc., 0.178 ton, making a total of 1.928 tons per gross ton of pig iron made. The rest of the world averages nearly 2½ tons of ore per ton of pig iron, apart from such cinder, scale, scrap, etc., as is available. In general there is less of that than in the United States because we go in so strongly for steel making. We have been making three-fourths as large a tonnage of pig iron and ferroalloys as of steel ingots and castings, while in the remainder of the world the proportion is about seven-eighths. The difference is due chiefly to the greater vogue of the iron casting abroad.

Years ago there were fears that, as we had apparently been skimming the cream of our iron ore deposits, there would come a time when we should be in much less advantageous position, by having to use much leaner ores. By various means we have got around that. The earliest statistics are for 1909. In 1909 and 1910 we averaged 1.890 tons of ore and 0.100

ton of other materials, making 1.990 tons altogether. The consumption of the latter then increased, while ore consumption went down correspondingly.

The average iron content of our iron ore has been fully maintained if not slightly increased. There has been a double influence. Lake Superior has been maintained by beneficiating the leaner ores that must be mined, and production elsewhere, of leaner ores, has not kept pace with Lake Superior, whereby the latter tends to hold up the average of the whole country. Much rich ore, moreover, is now imported.

A curious thing is that the official statistics show blast furnace consumption of "cinder, scale, etc." when the "etc." comprises what is probably the largest single item—scrap. The total of "cinder, scale, etc." last year, consumed only in the manufacture of pig iron, not ferroalloys, was 7,433,717 tons, which would be 13½ per cent of the tonnage of steel ingots produced. The cinder and scale percentage would scarcely amount to one-half as much. It would improve the statistics if scrap consumption were reported separately, as no doubt could be done by the furnaces without difficulty.

Last year there was a further decrease in coke consumption per ton of pig iron and ferroalloys, to 2058.6 lb., the smallest on record. In 1912 the average was 2436.5 lb. In 1924 it was 2212.0 lb. Thus there was two-thirds as much decrease in five years as there had been in the preceding 12 years. Presumably progress has not ceased.

### Economics for the Junior Partners

UNEMPLOYMENT that prevails in America, Great Britain and Germany appears to grow out of similar roots. German industrialists are endeavoring to persuade German labor to cooperate in a revival of production on terms conducive to the promotion of consumption, just as the anthracite producers of Pennsylvania invited their miners to consider. The Germans have been more successful than the Pennsylvanians. In their northwestern metal industries a substantial reduction has already been made by agreement. A foreign commentator remarks "this cut is likely to be followed by others and Germany seems to be in a fair way toward stealing a march on the rest of the world by persuading her laboring classes to work for less money and giving them more to do." We may add to this comment "by the promotion of consumption."

\* \* \*

A pleasing thing in respect to these tentatives has been the absence of any spirit of dictation. There is no thought of ruthless reduction of wages with the inevitable outcome of resentment and strikes, but rather a friendly spirit of partnership in which the senior partner inquires of his colleagues if it would not be desirable to arrange things so as to sell more goods. We have known some instances where the junior partners have themselves offered the suggestion. Our copper and lead producers have for a long time adjusted things amicably according to a sliding scale.

\* \* \*

This seems to reduce the situation to whether capital and labor consider themselves partners or whether they do not; and whether the partnership has good



salesmanship or bad. The affirmative idea does not prevail in the building industry. The index of the cost of building fell from 193.5 on May 1 to 166 on June 1, but only one partner participated in this and he had to get it mainly out of materials. However, he benefits partly by the ability to pick his men, which improves efficiency. The unpicked men remain idle. Yet there is a need for more houses, which people would like to have if they could afford them. We do not believe that the appetite of the American public has changed to apartment houses instead of individual houses. Some say that the people prefer less floor space and more automobile wheels. It is possible that they would like to have both floor space and wheels. Indeed, an argument of the automobile makers is that their vehicles have promoted life in the suburbs. Our own observation supports that view.

\* \* \*

Even in a strongly unionized trade economic law prevails. A fixed wage scale sifts the man out into good, indifferent and bad. The good get what they earn and the bad do not get anything. The restriction upon performance of work that is aimed to preserve the mediocre level breaks down. There is, however, much building that does not require superior skill and the mediocre can find employment in that. Carpenters have been known to work contemporaneously in the same town at 60, 80, 100 and 120 cents an hour. Some of them were union men. Their efficiency was substantially in correspondence with their remuneration. The 120-cent men would be chosen as joiners, while the 60-cent men were quite good at nailing boards on a roof.

THE half-year index to THE IRON AGE covering the first six months of 1930 is now available for distribution. Those who have asked for the index in the past will receive it as before, so only those not on the list need make the request at this time, addressing the Reader Service Department, Iron Age Publishing Co. 239 West Thirty-ninth Street, New York.

WITH an output of nearly 4,000,000 gross tons of ingots and castings last year, the American alloy steel industry reached a new pinnacle in its rapid development. The production statistics of the American Iron and Steel Institute reveal how striking has been this growth of 21 years. In 1909, the alloy steel was 0.75 per cent of the total and in 1929 it was 7 per cent. In tonnage there was a 22-fold expansion. Rustless steels now hold the center of the stage. These are finding increased application in the oil, chemical and allied industries, and their use in the heat-resisting and architectural fields also promises much.

WE have read of food supplies being delivered to the New York market and having to be wasted for lack of sale. We know of local farmers having to plow in some crops for the same reason. They lose their labor and seed, but at least they save being out of pocket for freight bills. Yet there are people in the cities who need food. Clearly there is a constriction in economic service somewhere. What is it? Cer-

tainly not in the transportation system. Is it the handlers, the truckmen and the retailers? Perhaps the farmers have responded to the urging to diversify by diversifying too much. However, the meat packers tell us that the consumption of beef has been subnormal for several years. Recent market reports have dwelled upon the exhaustion of the supply of flaxseed and the exigency of having to wait several months for the harvest of the new flax crop. Not everything is overdone.

## Apparatus Saves Foundry Labor

(Concluded from page 421)

has dropped into the machine. These machines are of the pneumatic, rollover-and-draw type.

### Hydraulic Washing of Sand from Castings

One unique piece of equipment in this foundry is a washer, where cores and sand are forced out of castings hydraulically and at the same time the castings are cleaned. This machine is housed in a concrete chamber 48 ft. long, 20 ft. high and 42 ft. wide. The steel top doors and front doors are automatically electrically operated. Castings lowered into the chamber by cranes are set on a cast iron table that revolves.

Three stages of nozzles, one stage above the other, play high-pressure water on the castings, directed by an arm which extends outside the structure. These nozzles are manipulated by men who can observe through windows the play of water. The water and sand flow into settling tanks, from which the sand is removed by a grab bucket and reclaimed; the water is used over and over again.

## Automatic Shape-Cutting for Machine Parts

(Concluded from page 417)

harder grades of material. The great majority of parts, however, employed for welded machinery parts, are made from mild or structural grades, which may be cut to shape without preheating or normalizing.

Indirect economies are also obtained in addition to the direct economy effected by the fabrication of machine frames from shape-cut steel. Volume for volume, production schedules may be maintained in a plant one-third the size required by old methods, it is stated. Special parts and special sizes are easily fabricated by the shape-cutting machine in steel plate, and delivery time is measured in hours as compared with days, if patterns and castings should have to be made.

This last statement summarizes the advantages of the oxy-acetylene shape-cutting machine and welded steel construction to the shop that turns out special machines or standard machines in limited numbers. No matter how complicated the machine, if designed for welded constructions, its frame, base and many of the moving parts can be economically and quickly fabricated from standard rolled steel plates, bars and shapes.

## The Week in Business

Drift of Current Financial  
and Economic Opinion

**F**INANCIAL opinion, which was dominantly optimistic some weeks ago, is now more cautious. Deferment of business improvement is rather general, and there are fears that recovery may be more or less impeded by any broad practice of wage reductions. The record-breaking drought is not yet widely analyzed, and what little is vouchsafed is well covered by the discussions elsewhere in this issue by Dr. Lewis H. Haney and Dr. Leonard P. Ayres.

### When Improvement Will Occur

As to the date of the upturn, Col. Ayres, in an article to appear in the *Bulletin* of the Cleveland Trust Co., says that "betterments may be confidently expected this year, and the improvement they usher in will probably prove more than merely seasonal."

The Brookmire Economic Service looks for no more than seasonal recovery up to October and asserts that "January is the earliest point at which we can see

prospects of a sustained upturn, and early 1931 will be poor in comparison with recent years, 1928-30."

The Alexander Hamilton Institute holds that any definite change, because the slump is now so pronounced, must necessarily be in the direction of improvement. Expansion in automobile manufacture, it suggests, will be the signal to start up things all along the line.

George Woodruff, chairman, National Bank of the Republic of Chicago, argues for increased activity in the latter part of 1930.

### Wage Cuts Believed Unwise

Threats of wage cuts have brought a restatement of the doctrine that well-filled pay envelopes supply an automatic market for large-scale, mass production. The *Business Bulletin* of the LaSalle Extension University urges "that the time is ripe for a reassertion of the pledges made last December." Aside from the economic slant, it warns that if business houses gen-

erally reduce wages and salary scales before the cost of living has dropped proportionately, a public opinion will be created that will be anything but healthy for the business world.

Brookmire maintains that "recovery will be made more difficult if the recent sporadic wage cuts become more general."

### Easier Money Market

In the matter of money, the Alexander Hamilton Institute makes the important observation that deposits in banks have gained on loans, total deposits standing "at their highest, exclusive of October and November of last year." The fact is taken as "indicative of a building up of a reservoir of credit from which loans may be made readily in the future as the needs of business require."

Commodity prices have overshot their present normal, according to the LaSalle service, "and will go higher before they go much lower."

## Drought Defers Recovery

(Concluded from page 411)

plans for the restriction of rubber and coffee output to maintain prices have been definitely abandoned with a consequent severe decline in the prices of these commodities. So also it is with copper. In addition, the price of silver has declined to the lowest levels in centuries, thus seriously disarranging the international trade relationships of those countries whose currencies are on a silver basis.

"The third factor is, of course, the sharp declines in productive activity in most of the industrial nations of the world.

### Bond Sales Spell Early Recovery

"The prospects for a sustained recovery in business, however, are not by any means all gloomy. The easy money conditions which are now present have definitely served to stimulate building construction and have made possible the flotation of bonds in volume far exceeding that of last year. The proceeds of bond sales are likely to be spent soon in productive activity, thus providing impetus to those industries which supply the materials and machinery used in construction work. The automobile industry, the output of which fell in July to the lowest levels of many years, has gone forward in August at an enhanced rate, and there remains the strong possibility of a real revival of operations in that industry in the early fall, with the makers in the low-priced class getting most of the business. The

consumption of goods has been so much in excess of production in recent weeks that real shortages have been created. Output has been sustained on a basis comparable with that adequate to supply the country when the population was ten million less than at present. It is reasonable to expect this situation to change for the better in the near future.

### Prospects Respecting Employment Not Equally Bright

"It is unfortunate that the prospects for increasing business activity do not hold equally happy hopes for employment. The present depression differs from some previous ones in that this year corporations have been comparatively mildly affected, whereas the burden has fallen most heavily on the individual employee. Manufacturers have been able to make good earnings in many lines by drastically reducing overhead expenses and by inaugurating policies which call for stringencies in various departments. Many plants are operating on part-time schedules with skeleton organizations, and a pickup in production in its earlier stages is likely to be accomplished by a schedule which more nearly approximates full time, rather than by an addition to working forces.

"In general, business for the next few months will be swinging with the seasonal tide. Industrial activity normally moves forward at an increased pace as we pass from the summer months into the fall. Aside from unfortunate and unforeseen drought developments, an improved and hopeful condition in business and industry is likely soon to be apparent."



# Iron and Steel Markets

## Drought Clouds Steel Outlook

Brings Renewed Uncertainty, Further Curtailment in Orders  
and Operations and Broader Price Weakness—  
Steel Production at 52 Per Cent

**R**ECOVERY in steel business from the stagnation of midsummer undoubtedly has been retarded by the uncertainty of crop damage caused by the prolonged and widespread drought. Pending the gaging of the effect of the losses on steel-consuming industries dependent wholly or in part on farm purchasing power, a renewed spirit of caution has developed generally. This has brought a further decline in the volume of new business, consequent curtailment in steel mill operating schedules and broader price weakness.

Steel production for the country at large is not above 52 per cent this week, compared with 54 per cent a week ago. The Steel Corporation continues to operate at about 63 per cent, but some of the larger independents are at 50 per cent or less. Operations have declined several points at Pittsburgh, Chicago and in the Valleys, while at Cleveland there has been a rise of three points, owing to a moderate gain in orders from a few automobile companies.

At a time when some signs of betterment were expected to appear, steel-consuming industries such as automobile, farm machinery and can manufacture are confronted with the new problem of determining how the crop situation will affect their prospects.

With the major part of automobile production centered on low-priced cars, for which there is ordinarily a large market in rural communities, the outlook for retail sales is clouded. Farm machinery builders are checking up to ascertain how seriously low total returns for farm products will restrict their fall activity, although some manufacturers in this group are swinging into larger output of tractors and combines for foreign shipment.

Can manufacturers already face the possibility of smaller packs of vegetable crops, and moderate hold-ups of tin plate shipments have brought a decline to 60 per cent in the output of this product from an average slightly above that figure a week ago. Wire fencing and galvanized sheets are adversely affected.

Meanwhile, there are a few developments of an encouraging character. Resumption of automobile production on a scale slightly above that of July has aided mills at Chicago and Cleveland in a small way, but there has been no important gain in takings of steel by the motor car industry. The farm machinery builders, helped out by export orders, are ordering steel a little more freely at Chicago and will step up production above the low midsummer rate, notwith-

standing the uncertainty in the domestic market. Building construction in the Chicago district is contributing to larger bookings of structural steel, with an increasing tonnage of pending work.

Structural steel and pipe backlogs account for a good measure of the current rate of steel making. Bookings of structural steel were 45,500 tons, the largest total in four weeks, while 60,000 tons in new projects, the highest figure since late June, promises further accessions to structural mill order books. Of the prospective work, 20,000 tons is for highway bridges for the State of Kentucky.

Further large tonnages of pipe for natural gas and gasoline lines are expected, but may come too late to make an important addition to this year's pipe mill schedules. A more likely source of early tonnage lies in the probability that the railroads, some of which are now preparing their rail-buying programs, will enter the market next month for their 1931 requirements.

With steel producers aggressively seeking business to bolster up their declining operations and with steel buyers exerting pressure for concessions, fresh price weakness has developed on a number of products. Plates and shapes have been sold in competitive markets at 1.60c., Pittsburgh, a \$1 a ton decline, while sheet mills, whose operations are seriously depressed, have given concessions of \$1 to \$2 a ton on galvanized and blue annealed sheets, and to a less extent \$1 a ton cuts have appeared in black sheet sales. The latter product is definitely down \$1 a ton at Chicago. Large rivets have declined \$3 a ton to \$2.75 a 100 lb., Pittsburgh. Billets are off \$1 a ton at Chicago to \$32.

Although pig iron is weak in nearly all markets, some strength has appeared in other raw materials. Blast furnace coke is 10c. a ton higher at \$2.60, Connellsville, Pa., while heavy melting steel scrap has advanced 25c. a ton at Pittsburgh. Scrap grades generally are steadier or firmer in some centers, but where strength has developed it is based on scarcity rather than on increased consumer buying. Southern pig iron has declined 50c. a ton at Cincinnati to \$12, Birmingham, and this price is also freely available to buyers in the Chicago district.

A further reduction in the composite prices of THE IRON AGE brings that for finished steel to 2.156c. a lb. and that for pig iron to \$16.88 a gross ton. The steel price is the lowest since February, 1922, and is only \$3.02 a net ton above the minimum of that period, while the pig iron composite is the lowest since 1915.



## A Comparison of Prices

**Market Prices at Date, and One Week, One Month and One Year Previous,  
Advances Over Past Week in Heavy Type, Declines in Italics**

Pig Iron, Per Gross Ton:	Aug. 12, 1930	Aug. 5, 1930	July 15, 1930	Aug. 13, 1929
No. 2 fdy., Philadelphia.....	\$19.76	\$19.76	\$19.76	\$21.26
No. 2, Valley furnace.....	18.00	18.00	18.00	18.50
No. 2, Southern, Cin'ti.....	15.59	16.19	16.19	17.69
No. 2, Birmingham.....	14.00	14.00	14.00	14.50
No. 2 foundry, Chicago*.....	17.50	17.50	18.00	20.00
Basic, del'd eastern Pa.....	18.75	18.75	18.75	19.75
Basic, Valley furnace.....	18.00	18.00	18.00	18.50
Valley Bessemer, del'd P'gh..	20.26	20.26	20.26	20.76
Malleable, Chicago*.....	17.50	17.50	18.00	20.00
Malleable, Valley.....	18.50	18.50	18.50	19.00
L. S. charcoal, Chicago.....	27.04	27.04	27.04	27.04
Ferromanganese, furnace.....	94.00	94.00	94.00	105.00

Rails, Billets, etc., Per Gross Ton:				
Rails, heavy, at mill.....	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	36.00	36.00
Rerolling billets, Pittsburgh.	31.00	31.00	31.00	35.00
Sheet bars, Pittsburgh.....	31.00	31.00	31.00	35.00
Slabs, Pittsburgh.....	31.00	31.00	31.00	35.00
Forging billets, Pittsburgh.....	36.00	36.00	36.00	40.00
Wire rods, Pittsburgh.....	36.00	36.00	36.00	42.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh. lb...	1.70	1.70	1.70	1.85

<b>Finished Steel,</b>				
<i>Per Lb. to Large Buyers:</i>	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.65	1.65	1.65	1.95
Bars, Chicago.....	1.75	1.75	1.75	2.05
Bars, Cleveland.....	1.75	1.75	1.75	1.95
Bars, New York.....	1.98	1.98	1.98	2.29
Tank plates, Pittsburgh.....	1.60	1.65	1.65	1.95
Tank plates, Chicago.....	1.75	1.75	1.75	2.05
Tank plates, New York.....	1.88	1.88	1.93	2.22½
Structural shapes, Pittsburgh.....	1.60	1.65	1.65	1.95
Structural shapes, Chicago...	1.75	1.75	1.75	2.05
Structural shapes, New York.....	1.85½	1.85½	1.90½	2.19½
Cold-finished bars, Pittsburgh.....	2.10	2.10	2.10	2.30
Hot-rolled strips, Pittsburgh.....	1.65	1.65	1.65	1.90
Cold-rolled strips, Pittsburgh.....	2.35	2.35	2.45	2.75

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

<b>Finished Steel,</b>	<b>Aug. 12, 1930</b>	<b>Aug. 5, 1930</b>	<b>July 15, 1930</b>	<b>Aug. 13, 1929</b>
<i>Per Lb. to Large Buyers:</i>	<b>Cents</b>	<b>Cents</b>	<b>Cents</b>	<b>Cents</b>
<b>Sheets, black, No. 24, P'gh...</b>	<b>2.45</b>	<b>2.45</b>	<b>2.45</b>	<b>2.85</b>
<b>Sheets, black, No. 24, Chicago</b>				
dist. mill .....	<i>2.55</i>	<i>2.60</i>	<i>2.65</i>	<i>2.95</i>
<b>Sheets, galv., No. 24, P'gh...</b>	<b>3.05</b>	<b>3.10</b>	<b>3.15</b>	<b>3.50</b>
<b>Sheets, galv., No. 24, Chicago</b>				
dist. mill .....	<i>3.20</i>	<i>3.20</i>	<i>3.25</i>	<i>3.60</i>
<b>Sheets, blue, No. 13, P'gh...</b>	<b>2.05</b>	<b>2.15</b>	<b>2.15</b>	<b>2.35</b>
<b>Sheets, blue, No. 13, Chicago</b>				
dist. mill .....	<i>2.25</i>	<i>2.25</i>	<i>2.25</i>	<i>2.45</i>
<b>Wire nails, Pittsburgh .....</b>	<b>2.05</b>	<b>2.05</b>	<b>2.05</b>	<b>2.55</b>
<b>Wire nails, Chicago dist. mill</b>	<b>2.10</b>	<b>2.10</b>	<b>2.15</b>	<b>2.60</b>
<b>Plain wire, Pittsburgh .....</b>	<b>2.30</b>	<b>2.30</b>	<b>2.30</b>	<b>2.40</b>
<b>Plain wire, Chicago dist. mill</b>	<b>2.35</b>	<b>2.35</b>	<b>2.35</b>	<b>2.45</b>
<b>Barbed wire, galv., P'gh...</b>	<b>2.80</b>	<b>2.80</b>	<b>2.80</b>	<b>3.20</b>
<b>Barbed wire, galv., Chicago</b>				
dist. mill .....	<i>2.85</i>	<i>2.85</i>	<i>2.85</i>	<i>3.30</i>
<b>Tin plate, 100 lb. box, P'gh...</b>	<b>\$5.25</b>	<b>\$5.25</b>	<b>\$5.25</b>	<b>\$5.35</b>

Old Material, Per Gross Ton:				
Heavy melting steel, P'gh.....	\$15.00	\$14.75	\$14.75	\$19.25
Heavy melting steel, Phila.....	12.50	12.50	12.50	16.50
Heavy melting steel, Ch'go....	12.00	12.00	12.00	15.00
Carwheels, Chicago.....	13.50	13.50	13.50	14.00
Carwheels, Philadelphia.....	14.50	14.50	14.50	16.50
No. 1 cast Pittsburgh.....	13.50	13.50	13.50	15.50
No. 1 cast Philadelphia.....	13.00	13.00	13.00	16.50
No. 1 cast Ch'go (net ton)....	12.00	12.00	12.00	14.50
No. 1 RR. wrot., Phila.....	15.00	15.00	15.00	16.00
No. RR. wrot, Ch'go (net)....	10.00	10.00	10.00	14.00

Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt.....	\$2.60	\$2.50	\$2.50	\$2.75
Foundry coke, prompt.....	3.50	3.50	3.50	3.75

Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York.....	11.12½	11.12½	11.62½	18.12½
Electrolytic copper, refinery.....	10.75	10.75	11.25	17.75
Tin (Straits), New York.....	30.00	30.25	29.50	46.37½
Zinc, East St. Louis.....	4.32½	4.50	4.12½	6.80
Zinc, New York.....	4.67½	4.85	4.47½	7.15
Lead, St. Louis.....	5.35	5.35	5.15	6.55
Lead, New York.....	5.50	5.50	5.25	6.75
Antimony (Asiatic), N. Y. . .	7.75	8.25	6.85	8.75

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

## PITTSBURGH

**P**ITTSBURGH, Aug. 12.—Further decline in the volume of new business and consequent curtailment in steel mill operating schedules has brought the industry in this and nearby districts to new low levels. July expectations of moderate improvement this month have been definitely invalidated by continued drought conditions throughout the major portion of the country, which has brought moribundity to industrial activity already depressed.

It is yet too early to gage the extent of damage which weather conditions have brought to the agricultural industry. In the meantime, important steel-consuming industries are still pursuing their policy of watchful waiting with additional caution.

New business booked last week established new tonnage lows which had not been equaled since 1922. Specifications continue at about the same rate as during July, with minor improvement for some companies which enjoyed more than their usual share of the business of certain automobile companies.

The present week indicates little change, and steel ingot output, as well as rolling mill schedules, are being adjusted downward to meet the lowered state of activity. Even the larger companies in the district with a diversified line of products have

scaled down production, and steel ingot output is at 50 to 55 per cent of capacity, with the lower figure probably more representative. In the Valleys steel ingot rate is not above 45 per cent. Open-hearth furnaces that are in operation are not being pushed, and the same is true of blast furnaces.

Sheet and strip schedules are extremely light, and tin plate production has fallen to about 60 per cent. Plate mills are fairly busy supplying skelp to the pipe units, which are running at close to capacity on lap-weld, seamless and electric welded material. No new line pipe orders have

been reported, but the probability of additional business before the end of the month is strong.

Structural mills have a fair backlog and are running conservatively in order to extend tonnage as long as possible. No outstanding fabricated awards are reported in this district, but the Kentucky State Highway Department is inquiring for 20,000 tons for ten bridges in various parts of the State, and public works and bridges in the Pittsburgh vicinity may take a round tonnage in the next two months.

Steel prices still reflect weakness in spite of lack of opportunity to test present quotations. Concessions of \$1 to \$2 a ton on blue annealed and light plates have become so general that a range of at least \$1 a ton is necessary to indicate the market, and shading of recent minimums on black and galvanized sheets is reported in some sections. Large rivets have been reduced \$3 a ton to \$2.75 per 100 lb., Pittsburgh, and cold-rolled strip is

quotable at 2.35c. to 2.45c., Pittsburgh, in recognition of general price cutting. Cold-finished steel bars are unchanged at 2.10c., Pittsburgh, although certain large buyers in the automotive field are reported to be getting a larger differential than they ordinarily enjoy. On the heavy hot-rolled products the market is holding nominally at 1.65c., Pittsburgh. Scrap prices have advanced slightly following a period of several weeks' inactivity. Furnace coke is also stronger, while pig iron is unchanged in a dead market.

**Pig Iron.**—Shipments show no improvement, and a decline in the case of some furnaces. In spite of the low rate of production, few if any stacks are shipping their entire output. Mold and roll foundries depending upon the steel industry for their activity are running at less than 50 per cent, and users of malleable iron are not doing this well. Jobbing foundries generally are depressed. The A. M. Byers Co., which is preparing to go into wrought iron production at its new Ambridge, Pa., plant, is taking fair-sized shipments of Bessemer iron from a Valley furnace. Basic iron needs of smaller steel companies are very light, and there is practically no open market buying of this grade to test the prevailing quotation of \$18, Valley furnace. Foundry iron is unchanged at the same figure, while malleable and Bessemer are holding at \$18.50, Valley. The local Pittsburgh furnace is quoting prices 50c. a ton higher.

Prices per gross ton, f.o.b. Valley furnace:

Basic	\$18.00
Bessemer	18.50
Gray forge	17.50
No. 2 foundry	18.00
No. 3 foundry	17.50
Malleable	18.50
Low phos., copper free	\$26.66 to 27.00

Freight rate to Pittsburgh or Cleveland district, \$1.76.

Prices per gross ton, f.o.b. Pittsburgh district furnace:

Basic	\$18.50
No. 2 foundry	18.50
No. 3 foundry	18.00
Malleable	19.00

Freight rates to points in Pittsburgh district range from 63c. to \$1.13.

**Semi-Finished Steel.**—Shipments last week were very light, certain consumers taking smaller tonnages than they averaged during July. The low rate of operations in the sheet

#### Specifications continue at the July rate.

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Ingot output has been scaled down partly by not pushing the furnaces.

\* \* \*

Tin plate production has fallen somewhat in response to drought uncertainties. Plate mills are busy on skelp for gas and oil pipe.

\* \* \*

Kentucky is inquiring for a large amount of bridge work.

\* \* \*

Prices are lower in steel lines but higher for scrap and coke.

and strip industries has resulted in extremely light buying of billets, slabs and sheet bars, and material under contract is not being ordered out in significant volume. The price is unchanged at \$31, Pittsburgh or Youngstown. Demand for forging billets is dull, but occasional spot sales are bringing \$36, Pittsburgh. Shipments of wire rods are particularly light because of the low rate of operations of the bolt, nut and rivet makers. The price is holding at \$36, Pittsburgh.

**Bars, Plate and Shapes.**—Specifications so far this month are behind the corresponding July period with some companies, and new business is generally in lighter volume than it has been at any time this year. Plate mill operations are being sustained both here and in the Valleys by heavy demands for skelp from pipe units, and production of structural shapes is being maintained at a better rate than the average for finished steel products. Bar mill operations, on the other hand, are sharply curtailed because of lack of demand from the automobile industry and other large consuming groups. Cold finishers are taking very light tonnage, and output of alloy steel bars is at a low ebb. Shipments of reinforcing bars are holding up, but little new business is coming

out in this territory. The same is true in the case of structural shapes, which have remained fairly active in the East. Scattered inquiry for barges is coming out, but principally involves individual units and is slow in being closed.

Prices on the heavy hot-rolled products are nominally unchanged, although by no means steady. Reports of shading of 1.65c., Pittsburgh, on plates and shapes have developed in some localities, principally in the East. Occasionally buyers in this district claim to have a better price, but the information is indefinite. Bars are better maintained at 1.65c., Pittsburgh.

**Rails and Track Supplies.**—Releases so far this month have been above the expectations of some mills and indicate that the carriers have allowed their requirements to fall off as much as possible, and are now being forced to order out material for immediate needs. With railroad traffic still running at a reduced rate, leading companies are inclined to maintain a very conservative policy in regard to new buying. No new inquiry for rails or accessories has come out.

**Bolts, Nuts and Rivets.**—The price on large rivets has been reduced \$3 a ton to 2.75c. a lb., Pittsburgh. The reduction follows a cut of \$4 a ton during the spring. Quotations on small rivets are unchanged at 70, 10 and 5 per cent off list, while bolts and nuts remain at 73 per cent off list. Demand is very light, and mill operations are not averaging more than 50 per cent of capacity.

**Tubular Goods.**—Interest in this market continues to center on prospective pipe line awards, none of which has been reported closed in the last week. Some steel companies are inclined to believe that not much more pipe business will be placed this year because of the limited time available for installation work. On the other hand, it is likely that some lines will be placed, with little prospect of laying this year, but with the idea of getting an early place on mill schedules in the 1931 season. Pipe production is holding steadily at close to capacity on larger sizes of lapweld, seamless and electric welded pipe. On

## THE IRON AGE Composite Prices

### Finished Steel

Aug. 12, 1930, 2.156c. a Lb.

One week ago	2.171c.
One month ago	2.171c.
One year ago	2.398c.

Based on steel bars, beams, tank plates, wire, rails, black pipe and black sheets. These products make 87 per cent of the United States output of finished steel.

	High	Low
1930	2.362c., Jan. 7;	2.156c., Aug. 12
1929	2.412c., April 2;	2.362c., Oct. 29
1928	2.391c., Dec. 11;	2.314c., Jan. 3
1927	2.453c., Jan. 4;	2.293c., Oct. 25
1926	2.453c., Jan. 5;	2.403c., May 18
1925	2.560c., Jan. 6;	2.396c., Aug. 18

### Pig Iron

Aug. 12, 1930, \$16.88 a Gross Ton

One week ago	\$16.96
One month ago	17.09
One year ago	18.42

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High	Low
1930	\$18.21, Jan. 7;	\$16.88, Aug. 12
1929	18.71, May 14;	18.21, Dec. 17
1928	18.59, Nov. 27;	17.04, July 24
1927	19.71, Jan. 4;	17.54, Nov. 1
1926	21.54, Jan. 5;	19.46, July 13
1925	22.50, Jan. 13;	18.96, July 7



# Mill Prices of Finished Iron and Steel Products

## Iron and Steel Bars

### Soft Steel

	Base per Lb.
F.o.b. Pittsburgh mill.....	1.65c. to 1.70c.
F.o.b. Chicago .....	1.75c. to 1.85c.
Del'd Philadelphia .....	1.94c.
Del'd New York.....	1.98c.
F.o.b. Cleveland .....	1.70c. to 1.75c.
F.o.b. Lackawanna .....	1.75c. to 1.85c.
F.o.b. Birmingham .....	1.90c.
C.i.f. Pacific ports.....	2.25c.
F.o.b. San Francisco mills.....	2.25c.

### Billet Steel Reinforcing

F.o.b. P'gh mills, 40, 50, 60-ft.....	1.60c. to 1.65c.
F.o.b. Birmingham, mill lengths.....	1.90c.

### Rail Steel

F.o.b. mills, east of Chicago dist.....	1.65c. to 1.70c.
F.o.b. Chicago Heights mill.....	1.65c.
Del'd Philadelphia .....	1.94c. to 1.99c.

### Iron

Common iron, f.o.b. Chicago.....	1.75c. to 1.85c.
Refined iron, f.o.b. P'gh mills.....	2.75c.
Common iron, del'd Philadelphia.....	2.09c.
Common iron, del'd New York.....	2.14c.

## Tank Plates

	Base per Lb.
F.o.b. Pittsburgh mill.....	1.60c. to 1.65c.
F.o.b. Chicago .....	1.75c. to 1.80c.
F.o.b. Birmingham .....	1.90c.
Del'd Cleveland .....	1.83 1/2 c.
Del'd Philadelphia .....	1.80 1/2 c. to 1.85 1/2 c.
F.o.b. Coatesville .....	1.70c. to 1.75c.
F.o.b. Sparrows Point.....	1.75c.
F.o.b. Lackawanna .....	1.75c.
Del'd New York.....	1.88c. to 1.93c.
C.i.f. Pacific ports.....	2.15c. to 2.25c.

## Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh mill.....	1.60c. to 1.65c.
F.o.b. Chicago .....	1.75c. to 1.80c.
F.o.b. Birmingham .....	1.90c.
F.o.b. Lackawanna .....	1.75c. to 1.80c.
F.o.b. Bethlehem .....	1.75c. to 1.80c.
Del'd Cleveland .....	1.83 1/2 c.
Del'd Philadelphia .....	1.66c. to 1.76c.
Del'd New York.....	1.85 1/2 c. to 1.90 1/2 c.
C.i.f. Pacific ports.....	2.15c. to 2.25c.

## Hot-Rolled Hoops, Bands and Strips

	Base per Lb.
6 in. and narrower, P'gh.....	1.70c. to 1.75c.
Wider than 6 in., P'gh.....	1.65c.
6 in. and narrower, Chicago.....	1.85c. to 1.90c.
Wider than 6 in., Chicago.....	1.75c. to 1.80c.
Cooperage stock, P'gh.....	1.90c. to 2.00c.
Cooperage stock, Chicago.....	2.00c. to 2.10c.

## Cold-Finished Steel

	Base per Lb.
Bars, f.o.b. Pittsburgh mill.....	2.10c.
Bars, f.o.b. Chicago.....	2.10c.
Bars, Cleveland .....	2.10c.
Bars, Buffalo .....	2.10c.
Shafting, ground, f.o.b. mill.....	2.45c. to 3.40c.
Strips, P'gh .....	2.35c. to 2.45c.
Strips, Cleveland .....	2.35c. to 2.45c.
Strips, del'd Chicago.....	2.63c. to 2.73c.
Strips, Worcester .....	2.60c.
Fender stock, No. 20 gage, Pittsburgh or Cleveland .....	3.70c.

\*According to size.

## Wire Products

(Carload lots, f.o.b. Pittsburgh and Cleveland.)  
To Merchant Trade

	Base per Keg
Standard wire nails.....	\$2.05 to \$2.15
Cement coated nails.....	2.05 to 2.15
Galvanized nails .....	4.05 to 4.15

	Base per Lb.
Polished staples .....	2.50c. to 2.60c.
Galvanized staples .....	2.75c. to 2.90c.
Barbed wire, galvanized.....	2.70c. to 2.85c.
Annealed fence wire.....	2.30c. to 2.40c.
Galvanized wire, No. 9.....	2.75c. to 2.85c.
Woven wire fence (per net ton to retailers).....	\$65.00

### To Manufacturing Trade

Bright hard wire, Nos. 6 to 9 gage.....	2.30c.
Spring wire .....	3.30c.

(Carload lots, f.o.b. Chicago)

Wire nails .....	\$2.10 to \$2.15 (keg)
Annealed fence wire.....	2.40c. to 2.50c. (lb.)
Bright hard wire to manufacturing trade.....	2.35c.

Anderson, Ind., mill prices are ordinarily \$1 a ton over Pittsburgh base; Duluth, Minn., and Worcester, Mass., mill \$2 a ton over Pittsburgh, and Birmingham mill \$3 a ton over Pittsburgh.

## Light Plates

	Base per Lb.
No. 10, blue annealed, f.o.b. P'gh.....	1.90c. to 2.00c.
No. 10, blue annealed, f.o.b. Chicago dist.....	2.10c.
No. 10, blue annealed, del'd Phila.....	2.32c. to 2.42c.
No. 10, blue annealed, B'ham.....	2.15c.

## Sheets

	Base per Lb.
No. 13, f.o.b. P'gh.....	2.05c. to 2.15c.
No. 13, f.o.b. Chicago dist.....	2.25c.
No. 13, del'd Philadelphia.....	2.44c.
No. 13, blue annealed, B'ham.....	2.30c.

### Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	2.45c. to 2.55c.
No. 24, f.o.b. Chicago dist. mill.....	2.55c. to 2.65c.
No. 24, del'd Philadelphia.....	2.74c. to 2.84c.
No. 24, f.o.b. Birmingham.....	2.70c.

### Steel Furniture Sheets

No. 24, f.o.b. P'gh.....	3.70c.
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### Galvanized

No. 24, f.o.b. Pittsburgh.....	3.05c. to 3.10c.
No. 24, f.o.b. Chicago dist. mill.....	3.20c. to 3.30c.
No. 24, del'd Cleveland.....	3.28 1/2 c. to 3.33 1/2 c.
No. 24, del'd Philadelphia.....	3.34c. to 3.39c.
No. 24, f.o.b. Birmingham.....	3.25c. to 3.30c.

### Tin Mill Black Plate

No. 23, f.o.b. Pittsburgh.....	2.70c. to 2.80c.
No. 23, f.o.b. Chicago dist. mill.....	2.80c. to 2.90c.

### Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	3.60c.
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### Long Termes

No. 24, 8-lb. coating, f.o.b. mill.....	3.55c. to 3.65c.
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### Vitreous Enameling Stock

No. 24, f.o.b. Pittsburgh.....	3.80c.
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## Tin Plate

Standard cokes, f.o.b. P'gh district mills.....	\$5.25
Standard cokes, f.o.b. Gary.....	5.35

## Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per Package, 20 x 28 in.)

8-lb. coating I.C. \$10.30	25-lb. coating I.C. \$15.20
15-lb. coating I.C. 12.90	30-lb. coating I.C. 16.00
20-lb. coating I.C. 14.00	40-lb. coating I.C. 17.80

## Alloy Steel Bars

(F.o.b. maker's mill)

Alloy Quantity Bar Base, 2.65c. per Lb.

S.A.E. Series	Alloy Differential
2000 (1 1/2% Nickel).....	\$0.25
2100 (1 1/2% Nickel).....	0.55
2300 (1 1/2% Nickel).....	1.50
2500 (5% Nickel).....	2.25
3100 (5% Nickel).....	0.55
3200 Chromium.....	1.35
3300 Nickel Chromium.....	3.80
3400 Nickel Chromium.....	3.20
4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum).....	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum).....	0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel).....	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium).....	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium).....	0.45
5100 Chromium Spring Steel.....	0.20
6100 Chromium Vanadium Bar.....	1.20
6100 Chromium Vanadium Spring Steel.....	0.95
9250 Silicon Manganese Spring Steel (flats).....	0.25
Rounds and squares.....	0.50
Chromium Nickel Vanadium.....	1.50
Carbon Vanadium .....	0.95

Above prices are for hot rolled steel bars, forging quality. The differential for cold-drawn bars is 3/4c. a lb. higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a sectional area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2 1/4 in. thick, regardless of sectional area, take the bar price.

## Rails

	Per Gross Ton
Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	34.00
Light (from rail steel), f.o.b. mill.....	32.00
Light (from billets), f.o.b. Ch'go mill.....	36.00

## Track Equipment

	Base per 100 Lb.
Spikes, 3/4 in. and larger.....	\$2.80
Spikes, 1/2 in. and smaller.....	2.80
Spikes, boat and barge.....	3.00
Tie plate, steel.....	2.07 1/2

Angle bars .....	\$2.75
Track bolts, to steam railroads.....	\$3.30 to 4.00
Track bolts, to jobbers, all sizes, per 100 count .....	73 per cent off list

## Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Steel		Iron	
Inches	Black	Inches	Black
1/2 .....	47	1/2 .....	23
3/4 .....	53	3/4 .....	28
1 .....	58	1 .....	31
1 1/2 .....	62	1 1/2 .....	35
2 .....	64	2 .....	35
2 1/2 .....	57	2 1/2 .....	23
3 .....	61	3 .....	28
3 1/2 .....	58	3 1/2 .....	30
4 .....	56	4 .....	29
4 1/2 .....	55	4 1/2 .....	26
5 .....	55	5 .....	26

### Lap Weld

2 .....	45 1/2	2 .....	23
2 1/2 .....	49 1/2	2 1/2 .....	28
3 .....	45 1/2	3 .....	30
3 1/2 .....	43 1/2	3 1/2 .....	29
4 .....	42 1/2	4 .....	26
4 1/2 .....	42 1/2	4 1/2 .....	26

### Butt Weld, extra strong, plain ends

1/2 .....	43	1/2 .....	23
3/4 .....	49	3/4 .....	28
1 .....	55	1 .....	31
1 1/2 .....	60	1 1/2 .....	34
2 .....	62	2 .....	34
2 1/2 .....	63	2 1/2 .....	28

### Lap Weld, extra strong, plain ends

2 .....	55	2 .....	29
2 1/2 .....	59	2 1/2 .....	34
3 .....	58	3 .....	33
3 1/2 .....	54	3 1/2 .....	31
4 .....	47	4 .....	21
4 1/2 .....	46	4 1/2 .....	21

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1 1/2 points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discount of 5 and 2 1/2%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel	Charcoal Iron
2 in. and 2 1/2 in. .....	1 1/2 in. .... 1
2 1/2 in.—3 in. .... 46	1 1/2 in. .... 8
3 in.—3 1/2 in. .... 52	2 in.—2 1/2 in. .... 13
3 1/2 in.—4 in. .... 54	2 1/2 in.—3 in. .... 16
4 in.—4 1/2 in. .... 57	3 in.—3 1/2 in. .... 17
4 1/2 in. to 6 in. .... 46	3 1/2 in. to 4 in. .... 18
	4 in. .... 20
	4 1/2 in. .... 21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

### Standard Commercial Seamless Boiler Tubes

Cold Drawn	
1 in. .... 61	3 in. .... 46
1 1/4 to 1 1/2 in. .... 53	3 1/4 to 3 1/2 in. .... 48
1 1/2 in. .... 37	4 in. .... 51
2 to 2 1/4 in. .... 32	4 1/2, 5 and 6 in. .... 40
2 1/4 to 2 1/2 in. .... 40	

### Hot Rolled

2 and 2 1/4 in. .... 38	3 1/4 to 3 1/2 in. .... 54
2 1/4 and 2 1/2 in. .... 46	4 in. .... 57
3 in. .... 52	4 1/2, 5 and 6 in. .... 46

Beyond the above base discount a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points, with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gages take the mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

Per Cent Off List

Carbon, 0.10% to 0.30% base (carloads)....	55
Carbon, 0.30% to 0.40% base (carloads)....	50
Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.	



the other forms of tubular goods, demand is very quiet.

**Wire Products.**—Following slightly heavier specifications for manufacturers' wire at the beginning of the month, demand has again dropped off and shipments are no better than they were during July. Resumption of activity in certain large automobile plants has brought out releases from some companies, but the improvement is not general. The price of manufacturers' wire is unchanged at 2.30c., Pittsburgh, and reported to be steady. Business in merchant wire products is seriously affected by depressed conditions in the agricultural industry, and manufacturers of fencing anticipate a smaller tonnage than usual this year. Nails are dull, but prices seem slightly steadier at \$2.05 to \$2.15, with the lower figure applying only to jobber business.

**Sheets.**—Following a slight improvement in operating schedules last week, specifications again declined and mill schedules this week will fall well under 50 per cent in this and the Valley districts. Among the favorable factors are a slightly heavier demand from a few automobile makers, and generally heavier releases from the radio industry, which is beginning to anticipate fall and holiday demand. A slight improvement in shipments of galvanized sheets to the South and Southwest has been checked by drought conditions. The common finishes of sheets are moving more steadily than special grades, although a few mills are benefiting considerably by orders for the latter material.

Prices show little change, and weakness is more pronounced on some grades. On galvanized material, the 3.10c., Pittsburgh, price has become more general, with higher quotations hardly a market factor. Shading of the 3.10c. price is reported from some districts. Black sheets are still quotable at 2.45c. to 2.55c., and blue annealed sheets at 2.15c. On light plates made by jobbing mills, a 1.95c., Pittsburgh, quotation is becoming more prominent, representing a decline of \$1 a ton from the recent minimum. On continuous mill sheets the market ranges from 1.75c. to 1.80c. on the No. 10 gage, and 1.90c. to 1.95c. on the No. 13. Automobile body sheets are unchanged at 3.60c. and steel furniture at 3.70c.

**Tin Plate.**—Because of the effects of drought in many parts of the country, it is becoming more evident that the vegetable pack will be curtailed. The pack of peas, which is now practically completed, seems to be fully equal to that of 1929, but tomatoes and corn will fall considerably under last year's figures. Reports of suspensions in shipments of tin plate to principal can makers can not be verified in this district, although operations are known to have been curtailed in at least one of the principal plants of a leading container manufacturer. Production of tin plate shows little change from the previous week, with

mills in this district running at about 60 per cent of capacity, and the leading interest maintaining a slightly heavier figure. The price is unchanged at \$5.25 a base box.

**Strip Steel.**—Minor improvement in demand for strip, which had been reported by some makers in the last week or two, has not been maintained, and operations have again dropped to the low rate which prevailed during July. Slight improvement in the requirements of makers of office equipment and radios has given tonnage to a few mills, but not in large volume. Hot mills are running at 35 to 40 per cent of capacity, and cold mills at about 25 per cent. Prices on hot-rolled strip are unchanged at 1.65c. for material wider than 6 in., and 1.75c. for the narrower sizes. On cold-rolled, makers continue to quote 2.45c., Pittsburgh, on small lots, although concessions of \$1 to \$2 a ton have appeared even on carload lots.

**Cold-Finished Steel Bars.**—Demand is very light, and the capacity of the industry is less than 50 per cent active. Improved specifications from a few automobile makers has given the market a spotty aspect. The price is unchanged at 2.10c., Pittsburgh, with concessions reported occasionally, and little opportunity offered to test the market.

**Coke.**—Further curtailment of production of furnace coke in the Connellsville region has led to a stronger price situation, and the market is now quotable at \$2.60 per net ton, Connellsville, as compared to a recent range of \$2.50 to \$2.60. The leading interest in the region has completely suspended production. Foundry coke is very dull, with prices holding on the premium grades.

**Old Material.**—In spite of the con-

#### Warehouse Prices, f.o.b. Pittsburgh

	*Base per Lb.
Plates .....	2.85c.
Structural shapes .....	2.85c.
Soft steel bars and small shapes...	2.75c.
Reinforcing steel bars .....	2.75c.
Cold-finished and screw stock—	
Rounds and hexagons .....	3.35c.
Squares and flats .....	3.85c.
Bars .....	3.10c.
Hoops .....	4.10c.
Black sheets (No. 24), 25 or more bundles .....	3.50c.
Galv. sheets (No. 24), 25 or more bundles .....	4.15c.
Light plates, blue annealed (No. 10), 1 to 24 plates .....	2.85c.
Blue annealed sheets (No. 13) .....	3.00c.
Galv. corrug. sheets (No. 28), per square .....	4.03c.
Spikes, large .....	3.40c.
Small .....	3.80c. to 5.25c.
Boat .....	3.80c.
Track bolts, all sizes, per 100 count, 60 and 10 per cent off list .....	
Machine bolts, 100 count, 60 and 10 per cent off list .....	
Carriage bolts, 100 count, 60 and 10 per cent off list .....	
Nuts, all styles, 100 count, 60 and 10 per cent off list .....	
Large rivets, base per 100 lb. .....	\$3.30
Wire, black, soft ann'd, base per 100 lb. .....	\$2.60 to 2.70
Wire, galv. soft, base per 100 lb. .....	3.20 to 3.30
Common wire nails, per keg .....	2.45
Cement coated nails, per keg .....	2.65 to 2.80

\*On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 3999 lb.

tinued absence of mill buying, No. 1 heavy melting steel has been advanced 25c. a ton on the basis of purchases by dealers to cover old orders at prices ranging up to \$15.25. In one or two instances mills paid as high as \$15.50 for small tonnages bought direct from the railroads, and the bulk of the Pennsylvania Railroad list is reported to have been bought by dealers outside this district at figures ranging up to \$15.75. The advance in the market is not based upon heavy demand on the part of mills, but rather because of a shortage of first grade material and continued severity of inspection at one important consuming point. One or two mills which have sounded out the market in the last week were unable to buy at their price, and any considerable purchase in the next few days would undoubtedly lead to a further advance in quotations.

Hydraulic compressed sheets are also stronger, with dealers paying \$15 to \$15.50, and even higher, for Western material. Specialties are stronger, and scrap rails are quotable on the same basis as steel. The blast furnace grades are unchanged in a very dull market.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

Basic Open-Hearth Grades:	
No. 1 heavy melting steel .....	\$14.75 to \$15.25
No. 2 heavy melting steel .....	12.50 to 13.00
Scrap rails .....	14.75 to 15.25
Compressed sheet steel .....	15.00 to 15.50
Bundled sheets, sides and ends .....	12.50 to 13.00
Cast iron carwheels .....	15.00 to 15.50
Sheet bar crops, ordinary .....	15.50 to 16.00
Heavy breakable cast .....	11.50 to 12.00
No. 2 railroad wrought .....	14.50 to 15.00
Hvy. steel axle turnings .....	12.50 to 13.00
Machine shop turnings .....	8.00 to 8.50
Acid Open-Hearth Grades:	
Railr. knuckles and couplers .....	17.50 to 18.00
Railr. coll and leaf springs .....	17.50 to 18.00
Roller steel wheels .....	17.50 to 18.00
Low phos. billet and bloom ends .....	19.50 to 20.00
Low phos. mill plates .....	16.50 to 17.00
Low phos. light grades .....	16.50 to 17.00
Low phos. sheet bar crops .....	17.50 to 18.00
Heavy steel axle turnings .....	12.50 to 13.00
Electric Furnace Grades:	
Low phos. punchings .....	17.00 to 17.50
Heavy steel axle turnings .....	12.50 to 13.00
Blast Furnace Grades:	
Short shoveling steel turnings .....	8.50 to 9.00
Short mixed borings and turnings .....	8.50 to 9.00
Cast iron borings .....	8.50 to 9.00
Rolling Mill Grades:	
Steel car axles .....	21.50 to 22.50
Cupola Grades:	
No. 1 cast .....	13.00 to 14.00
Rails 3 ft. and under .....	16.50 to 17.00

#### Steel Scrap Grades Are Stronger at Detroit

DETROIT, Aug. 12.—There is a little firmer feeling on open-hearth grades of scrap in the district, probably because of the scarcity of this material. All other grades are selling at prices quoted a week ago.

Dealers' buying prices per gross ton, f.o.b. cars, Detroit:

Hvy. melting and shov. steel .....	\$11.00 to \$11.50
Borings and short turnings .....	6.25 to 6.75
Long turnings .....	5.75 to 6.25
No. 1 machinery cast .....	11.25 to 11.75
Automotive cast .....	13.50 to 14.00
Hydraul. comp. sheets .....	10.50 to 11.00
Stove plate .....	9.00 to 9.50
New No. 1 busheling .....	9.50 to 10.00
Old No. 1 busheling .....	8.75 to 9.25
Sheet clippings .....	8.00 to 8.50
Flashings .....	9.75 to 10.25

# Semi-Finished Steel, Raw Materials, Bolts and Rivets

## Mill Prices of Semi-Finished Steel

### Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and under 10-in., Pittsburgh	\$31.00
Rerolling, 4-in. and under 10-in., Youngstown	31.00
Rerolling, 4-in. and under 10-in., Cleveland	31.00
Rerolling, 4-in. and under 10-in., Chicago	32.00
Forging quality, Pittsburgh	36.00

### Sheet Bars (Open Hearth or Bessemer)

	Per Gross Ton
Pittsburgh	\$31.00
Youngstown	31.00
Cleveland	31.00

### Slabs

	Per Gross Ton
(8 in. x 2 in. and under 10 in. x 10 in.)	
Pittsburgh	\$31.00
Youngstown	31.00
Cleveland	31.00

### Skelp

(F.o.b. Pittsburgh or Youngstown)

	Per Lb.
Grooved	1.70c.
Universal	1.70c.
Sheared	1.70c.

### Wire Rods

(Common soft, base)

	Per Gross Ton
Pittsburgh	\$36.00
Cleveland	36.00
Chicago	37.00

## Prices of Raw Material

### Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	\$4.80
Old range non-Bessemer, 51.50% iron	4.65
Mesabi Bessemer, 51.50% iron	4.65
Mesabi non-Bessemer, 51.50% iron	4.50
High phosphorus, 51.50% iron	4.40
Foreign Ore, c.i.f. Philadelphia or Baltimore	
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algeria	10.00c.
Iron ore, low phos., Swedish, average 68% iron	12.00c.
Iron ore, basic Swedish, average 65% iron	10.00c.
Manganese ore, washed 52% manganese, from the Caucasus	28.00c. to 30.00c.
Manganese ore, Brazilian, African or Indian, basic 50%	28.00c. to 30.00c.
Tungsten ore, high grade, per unit, in 60% concentrates	\$12.00 to \$14.00
Chrome ore, 45 to 50% Cr <sub>2</sub> O <sub>3</sub> , crude, c.i.f. Atlantic seaboard	\$24.00
Molybdenum ore, 85% concentrates of MoS <sub>2</sub> delivered	50c. to 55c.

### Ferromanganese

	Per Gross Ton
Domestic, 80%, seaboard	\$94.00 to \$99.00
Foreign, 80%, Atlantic or Gulf port, duty paid	94.00 to 99.00

### Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	\$31.00 to \$33.00
Domestic, 16 to 19%	29.00 to 32.00

### Electric Ferrosilicon

	Per Gross Ton Delivered
50%	\$83.50
75%	130.00
	Per Gross Ton Furnace
10%	\$35.00
11%	37.00
	Per Gross Ton Furnace
12%	\$39.00
14 to 16%	39.00

### Bessemer Ferrosilicon

	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
10%	\$26.50
11%	28.50
12%	30.50
	Per Gross Ton
13%	\$32.50
14%	34.50
15%	37.00

### Silvery Iron

	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
6%	\$21.50
7%	22.00
8%	22.50
9%	23.50
10%	24.50
	Per Gross Ton
11%	\$26.50
12%	28.50
13%	30.50
14%	32.50
15%	35.00

Delivered prices at Chicago are about 50c. a ton below this schedule.

### Other Ferroalloys

Ferrotungsten, per lb. contained metal del'd	\$1.30 to \$1.40
Ferrocromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	11.00c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	\$3.15 to \$3.65
Ferrocobalt, 15 to 18%, per net ton, f.o.b. furnace, in carloads	\$160.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per gross ton	\$91.00
Ferrophosphorus, electric 24%, f.o.b. Anniston, Ala., per gross ton	\$122.50

### Fluxes and Refractories

#### Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silicon, gravel, f.o.b. Illinois and Kentucky mines	\$18.00
No. 2 lump, Illinois and Kentucky mines	20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid	\$18.00 to 18.50
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/4% silica, f.o.b. Illinois and Kentucky mines	32.50

#### Fire Clay Brick

	Per 1000 f.o.b. Works
High-Heat Duty Brick	
Intermediate Heavy Duty Brick	
Pennsylvania	\$43.00 to \$46.00 \$35.00 to \$38.00
Maryland	43.00 to 46.00 35.00 to 38.00
New Jersey	50.00 to 65.00
Ohio	43.00 to 46.00 35.00 to 38.00
Kentucky	43.00 to 46.00 35.00 to 38.00
Missouri	43.00 to 46.00 35.00 to 38.00
Illinois	43.00 to 46.00 35.00 to 38.00
Ground fire clay, per ton	7.00

#### Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	\$43.00
Chicago	52.00
Birmingham	50.00
Silica clay, per ton	\$8.50 to 10.00

#### Magnesite Brick

	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00
Standard size	45.00

#### Chrome Brick

	Per Net Ton
Standard size	\$45.00

### Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	\$2.60
Foundry, f.o.b. Connellsville prompt	\$3.25 to 4.75
Foundry, by-products, Ch'go ovens	8.00
Foundry, by-products, New England, del'd	11.00
Foundry, by-product, Newark or Jersey City, delivered	9.00 to 9.40
Foundry, by-product, Phila.	9.00
Foundry, Birmingham	5.00
Foundry, by-product, St. Louis, f.o.b. ovens	8.00
Foundry by-prod., del'd St. Louis	9.00

### Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.25 to \$1.75
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Gas coal, 3/4-in., f.o.b. Pa. mines	1.90 to 2.00
Mine run gas coal, f.o.b. Pa. mines	1.65 to 1.75
Steam slack, f.o.b. W. Pa. mines	.80 to .90
Gas slack, f.o.b. W. Pa. mines	.90 to 1.00

## Mill Prices of Bolts, Nuts, Rivets and Set Screws

### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

	Per Cent Off List
Machine bolts	.73
Carriage bolts	.73
Lag bolts	.73
Plow bolts, Nos. 1, 2, 3 and 7 heads	.73
Hot-pressed nuts, blank or tapped, square	.73
Hot-pressed nuts, blank or tapped, hexagons	.73
C.p.c. and t. square or hex. nuts, blank or tapped	.73
Washers*	7.00c. to 6.75c. per lb. off list

\*F.o.b. Chicago, New York and Pittsburgh.

†Bolts with rolled thread up to and including 1/2 in. x 6 in. take 10 per cent lower list prices.

### Bolts and Nuts

	Per Cent Off List
Semi-finished hexagon nuts	.73
Semi-finished hexagon castellated nuts, S.A.E.	.73
Stove bolts in packages, P'gh	.80, 10, 10 and 5
Stove bolts in packages, Chicago	.80, 10, 10 and 5
Stove bolts in packages, Cleveland	.80, 10, 10 and 5
Stove bolts in bulk, P'gh	.80, 10, 10, 5 and 2 1/2
Stove bolts in bulk, Chicago	.80, 10, 10, 5 and 2 1/2
Stove bolts in bulk, Cleveland	.80, 10, 10, 5 and 2 1/2
Tire bolts	.60, 10 and 10

Discounts of 73 per cent off on bolts and nuts apply on carload business with jobbers and large consumers.

### Large Rivets

	Base per 100 Lb.
(1/4-in. and larger)	
F.o.b. Pittsburgh or Cleveland	\$2.75
F.o.b. Chicago	3.00

### Small Rivets

(1/8-in. and smaller)

	Per Cent Off List
F.o.b. Pittsburgh	.70, 10 and 5
F.o.b. Cleveland	.70, 10 and 5
F.o.b. Chicago	.70, 10 and 5

### Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

	Per Cent Off List
Milled cap screws	.80, 10, 10 and 5
Milled standard set screws, case hardened	.80 and 5
Milled headless set screws, cut thread	.75 and 10
Upset hex. head cap screws, U.S.S. thread	.85 and 10
Upset hex. cap screws, S.A.E. thread	.85 and 10
Upset set screws	.80, 10 and 5
Milled studs	.70



# CHICAGO

## Steel Operations Drop to 55 Per Cent—Some Signs of Improvement Appearing

CHICAGO, Aug. 12.—News in the Chicago iron and steel market is mixed, some developments being of an encouraging nature while others point to continuation of the stagnation which has gripped the industry during most of the summer. Unlooked-for among developments at this time, when the usual seasonal upturn in demand might be expected, is the fact that open-hearth operations have lost ground in the week. One producer has dropped output to 50 per cent of ingot capacity, and the district as a whole cannot now boast of more than 55 per cent.

On the brighter side of the picture is a more general and a slightly larger aggregate movement of bar mill products. Agricultural implement manufacturers are swinging into production on foreign orders for tractors and combines, and the domestic market for farm equipment has a somewhat better tone.

Pipe production is holding to an even stride, and structural awards and inquiries offer encouragement from the viewpoint of tonnage. However, fabricating shops are on the verge of disregarding costs when making estimates and complaint is loud and continuous against prices that are being offered.

Underneath the surface of the rail market are indications that active preparation is being made for the purchase of 1931 requirements. Consumers' interest in the sheet market is very low and hot mills, no longer hampered by extreme weather, find that curtailed operations are forced on them because of lack of orders.

Taken as a whole, it is probable that new strength gathered by the market outweighs the developments which tend to retard progress. Sales of finished steel are well up to the average of recent weeks, and backlogs of most products are steady. Consumers are showing more interest in the form of inquiries, and it is worthy of note that an increasing number of users are studying needs for the next 30 to 60 days.

**Sheets.**—This market is dull and prices continue under pressure. Sales in the week have established black sheets at 2.55c. to 2.65c. a lb., Chicago district mill. Operations remain light, the average not being above 50 per cent of capacity. Orders, the bulk of which are for immediate delivery, are in such small volume that mill schedules are not completed to the end of the week, and units which started Monday, after a shutdown of several weeks, are not assured of continuous output for more than three or four days. Roofers are specifying somewhat more freely and furnace pipe makers are finding more use for sheets.

*Base prices per lb., deliv'd from mill in Chicago:* No. 24 black sheets, 2.60c. to 2.70c.; No. 24 galv., 3.25c. to 3.35c.; No. 10 blue ann'd, 2.15c. Deliv'd prices at other Western points are equal to the freight from Gary, plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

**Pig Iron.**—Changes in this market center around the use of pig iron which is slowly gaining headway. Shipping schedules now well arranged for the remainder of the month as-

sure deliveries which will top the total in July by a fair margin. Prices for Northern foundry iron remain fairly steady at \$17.50 to \$18 a ton, f.o.b. local furnaces. Agricultural implement manufacturers are making known larger needs and some improvement is noted in the melt by manufacturers of automobiles. Southern iron is in light demand and prices are weak at \$12 a ton, Birmingham. A cargo of silvery iron has been unloaded at Chicago, and a boatload of low phosphorus iron has been discharged at Milwaukee.

*Prices per gross ton at Chicago:*

N'th'n No. 2 fdy., sil.	1.75	
to 2.25		\$17.50 to \$18.00
N'th'n No. 1 fdy., sil.	2.25	
to 2.75		18.00 to 18.50
Malleable, not over 2.25 sil.		17.50 to 18.00
High phosphorus		17.50 to 18.00
Lake Super. charc'l, sil.	1.50	27.04
S'th'n No. 2 fdy., sil.		18.01 to 18.51
Low phos., sil. 1 to 2, cop-		
per free		29.50
Silvery, sil. 8 per cent.		27.29
Bess. ferrosilicon, 14-15 per		
cent		46.29

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

### Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Soft steel bars .....	3.00c.
Reinforc'g bars, billet steel—	
Less than 5 tons.....	2.85c.
5 tons to 30 tons.....	2.45c.
30 tons to 200 tons.....	2.00c.
200 tons and over.....	1.85c.
Rail steel reinforcement—	
Less than 5 tons.....	2.50c.
5 tons to 30 tons.....	2.10c.
30 tons and over.....	1.50c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons.....	3.35c.
Flats and squares.....	3.85c.
Bands (¾ in. in Nos. 10 and 12	
gages) .....	3.20c.
Hoops (No. 14 gage and lighter) ..	3.75c.
Black sheets (No. 24).....	4.05c.
Galv. sheets (No. 24).....	4.60c.
Blue ann'd sheets (No. 10).....	3.35c.
Spikes (¾ in. and larger).....	3.55c.
Track bolts .....	4.55c.
Rivets, structural .....	4.00c.
Rivets, boiler.....	4.00c.

### Per Cent Off List

Machine bolts.....	60 and 10
Carriage bolts .....	60 and 10
Coach or lag screws.....	60 and 10
Hot-pressed nuts, sq., tap. or blank,	
60 and 10	
Hot-pressed nuts, hex., tap. or blank,	
60 and 10	
No. 8 black ann'd wire, per	
100 lb. ....	\$3.45
Com. wire nails, base per keg.	\$2.30 to 2.50
Cement c't'd nails, base per	
keg .....	2.30 to 2.50

**Cast Iron Pipe.**—An encouraging feature of this market is the fact that small inquiries, both from private and public interests, are more numerous. Several contractors' jobs are shaping in Michigan, where Birmingham will buy 3000 ft. of 12-in. pipe and Garden City will purchase a small tonnage of miscellaneous sizes. Scranton, Iowa, has closed on 10,000 ft. of 4-in. and 4000 ft. of 2-in. pipe with the McWane Cast Iron Pipe Co. Prices for 6-in. and larger diameters remain steady at \$37 to \$38 a ton, Birmingham.

*Prices per net ton, deliv'd Chicago:* Water pipe, 6-in. and over, \$45 to \$46; 4-in., \$48 to \$49; Class A and gas pipe, \$3 extra.

**Ferroalloys.**—Demand for these commodities remains light as to both sales and specifications.

**Bolts, Nuts and Rivets.**—Releases from most consumers remain in small volume. Agricultural implement manufacturers are taking larger quantities, and there are indications that demand from this source may expand still further. Jobbers in the South and Southwest are ordering more freely.

**Plates.**—This week's plate market has shown added life, but there is little to indicate that the better pace will be maintained. Shipments of plates to pipe manufacturers are undiminished and there is some prospect that they may expand in the early fall, it having been estimated in some quarters that not far from 9000 miles of oil and gas trunk line pipe will be laid this year. Manufacturers of oil storage tanks have entered specifications for 1500 tons against old contracts, and two fresh inquiries, one for 1500 tons and the other for 1000 tons, are now before the trade. East Chicago, Ind., is taking bids on a water intake which will require 1600 tons of plates.

The railroad equipment market is quiet. The Illinois Steel Co. has purchased four locomotives. The Great Northern has placed 100 cars and the Western Fruit Express has contracted for 100 underframes. The 6000 tons of steel needed for the 500 cars recently ordered by the Minneapolis & St. Louis has been placed with two Chicago mills.

Narrow plates, often used in forming sections for buildings, are in light demand for this purpose as most current projects call for small tonnages and light sections. Most sizes of plates can be had on short notice. Stocks in the hands of users are generally small, as evidenced by the fact that in one case a round tonnage, which was scheduled to move by water, was rushed by rail to prevent interruption in a manufacturing plant schedule.

**Structural Material.**—Following several weeks in which this market was unusually quiet, there is now a

situation which promises betterment. In the first place, awards aggregate about 10,000 tons. This business helps shop operations materially. Fresh inquiries reach the impressive total of 15,000 tons, which is especially encouraging for the reason that several of the requests for prices are for large tonnages that the market sorely needs. Notable among awards are 6500 tons for schools and about 3000 tons for highway and railroad bridge work. Bridges, which will take over 6000 tons, play an important part in the new requests for prices. Estimators are more busily engaged than at any time in the last four or five weeks. Fabricating shops are still producing at low rates and, as a result, competition is keen and much complaint is heard regarding the prices quoted.

**Bars.**—Orders for bar mill products are beginning to flow more freely. Specifications in the first week in August were larger than at the opening of July, and inquiry shows decidedly that users' interest is growing as to needs beyond the immediate future. The effect of the resumption of automobile manufacture is noticed only to a small degree in the local market. However, inquiries from parts makers are an encouraging feature of the situation. Orders continue to be placed for tractors and combines for shipment to Europe. Several manufacturers have already speeded production and others are making rapid headway in arranging production schedules. On the other hand, domestic orders for farm equipment are scarce and much uncertainty exists as to how far-reaching will be the effects on business of drought and conditions in the grain markets.

The use of alloy steel bars shows moderate improvement. Sellers expect that the next week or 10 days will see a change for the better as a result of orders from the automobile and farm equipment manufacturers. It is reported here that automobile dealers' inventories are the lowest in several years and used car stocks are well depleted.

The rail steel bar market continues its slow pace. Mill backlogs are light and current orders are mostly for immediate shipment.

**Wire Products.**—Ten days of heavier orders appear to give strength to the thought that use of wire products by the manufacturing trade is slowly but surely expanding. A little over a week ago new orders and specifications started to expand from this source and no ground has been lost since that time. On the other hand, jobbers and distributors are extremely cautious and their orders are small for this time of the year. Shipments of woven wire fencing are measurably lighter than a year ago, and there is some fear among sellers that, due to crop conditions, fall trade in this commodity will be light. Production of wire products still stands at 40 per cent of capacity. Prices are fairly steady in most sections of the country.

Despite the appearance of some favorable signs of improving business, steel operations for Chicago district have declined to 55 per cent of capacity.

\* \* \*

Structural steel awards and inquiries in larger volume, and aggregate movement of bar mill products has increased.

\* \* \*

Farm machinery manufacturers preparing for larger production, notwithstanding clouded outlook caused by crop situation.

\* \* \*

Railroads are said to be preparing inquiries for 1931 rail requirements.

\* \* \*

General consumers showing more interest in forward requirements, but not beyond 30 to 60 days.

**Cold-Rolled Strip.**—Orders are more numerous and inquiries point to improvement in this market. Operations at 25 per cent of capacity remain near the low point of the year.

**Semi-Finished Steel.**—Orders from general manufacturers, not including the automobile industry, are the best in four weeks. Prices for rerolling billets are off \$1 to \$32 a ton, Chicago.

**Rails and Track Supplies.**—Reports are becoming more insistent that a number of railroads are actively engaged in preparing 1931 rail programs and that purchases will be not long delayed. The Great Northern is delaying for a short time the purchase of 9000 tons for a new line in the Northwest. It is understood here that grading the line has not progressed to the point where it is necessary to make immediate purchase of the rails. Inquiries and purchases of miscellaneous lots of rails are lacking in this market. Specifications for fastenings are in satisfactory volume for this time of year.

*Prices f.o.b. mill, per gross ton:* Standard section open-hearth and Bessemer rails, \$43; light rails, rolled from billets, \$36. *Per lb.:* Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.07½c. to 2.15c.; angle bars, 2.75c.

**Reinforcing Bars.**—This market has changed very little in the past week. Estimators are moderately well engaged for this time of the year, but many of the projects that are figured do not reach the construction stage. A year ago the market was well supported by activity in large apartment buildings, whereas today there is practically none of this class of work. The A. E. Staley Mfg. Co., Decatur, Ill., has awarded a contract for a second building, making its purchases of reinforcing bars in the past two

weeks not less than 2300 tons. Road work accounts for 1000 tons, and additional lettings may be made this week. Warehouse prices for reinforcing bars are still unstable.

**Coke.**—The bulk of consumers of by-product foundry coke are covered by contracts for the remainder of the year and, as a result, spot purchases are virtually absent from the market. The price is steady at \$8 a ton, f.o.b. local ovens.

**Old Material.**—This market remains quiet in sales to consumers, but dealers are active in attempts to cover old orders and are bidding higher for available supplies. In some cases, brokers find that they cannot buy scrap at a profit against orders that are no older than 30 to 60 days. One of the last sales of pressed steel wheels made to a consumer was at \$15.50 a gross ton, delivered. Some users are buying this grade direct, and brokers are offering this figure at the sacrifice of profits, and still they find few wheels available to apply against orders on books. Railroad and industrial lists are unusually numerous this week.

*Prices deliv'd Chicago district consumers:  
Per Gross Ton*

Basic Open-Hearth Grades:	
Heavy melting steel.....	\$12.00 to \$12.25
Shoveling steel .....	12.00 to 12.25
Frogs, switches and guards, cut apart, and misc. rails	13.00 to 13.50
Hydraul. compressed sheets	10.25 to 10.75
Drop forge flashings.....	8.50 to 9.00
No. 1 busheling .....	9.50 to 10.00
Forg'd cast and r'd steel carwheels .....	15.00 to 15.50
Railroad tires, charg. box size .....	15.50 to 16.00
Railroad leaf springs cut apart .....	15.50 to 16.00
Acid Open-Hearth Grades:	
Steel couplers and knuckles	13.50 to 14.00
Coil springs .....	16.00 to 16.50
Electric Furnace Grades:	
Axle turnings .....	11.25 to 11.75
Low phos. punchings.....	13.00 to 13.50
Low phos. plates, 12 in. and under .....	13.00 to 13.50
Blast Furnace Grades:	
Axle turnings .....	9.50 to 10.00
Cast iron borings .....	7.75 to 8.25
Short shoveling turnings...	7.75 to 8.25
Machine shop turnings...	6.00 to 6.50
Rolling Mill Grades:	
Iron rails .....	13.00 to 13.50
Rerolling rails .....	14.50 to 15.00
Cupola Grades:	
Steel rails, less than 3 ft.	13.75 to 14.25
Steel rails, less than 2 ft.	14.50 to 15.00
Angle bars, steel .....	13.25 to 13.75
Cast iron carwheels .....	13.50 to 14.00
Malleable Grades:	
Railroad .....	13.50 to 14.00
Agricultural .....	12.25 to 12.75
Miscellaneous:	
*Relaying rails, 56 to 60 lb.	23.00 to 25.00
*Relaying rails, 65 lb. and heav. ....	26.00 to 31.00
Per Net Ton	
Rolling Mill Grades:	
Iron angle and splice bars	12.00 to 12.50
Iron arch bars and trans- oms .....	13.50 to 14.00
Iron car axles.....	21.50 to 22.00
Steel car axles .....	15.00 to 15.50
No. 1 railroad wrought...	9.75 to 10.25
No. 2 railroad wrought...	10.75 to 11.00
No. 1 busheling.....	7.50 to 8.00
No. 2 busheling.....	6.00 to 6.50
Locomotive tires, smooth...	14.50 to 15.00
Pipes and flues.....	8.00 to 8.50
Cupola Grades:	
No. 1 machinery cast.....	12.00 to 12.50
No. 1 railroad cast.....	10.25 to 10.75
No. 1 agricultural cast...	9.50 to 10.00
Stove plate .....	9.50 to 10.00
Grate bars .....	8.50 to 9.00
Brake shoes .....	8.50 to 9.00
*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.	



# NEW YORK

## Further Weakness in Steel Prices— Pig Iron Sales About 7000 Tons

**NEW YORK, Aug. 12.**—Although consumers of pig iron are apparently more in need of small tonnage than in recent weeks, having reduced their stocks to a minimum, there is still a decided tendency on the part of prospective buyers to await offers rather than to inquire formally. Meanwhile, a substantial tonnage of Southern foundry iron continues to move into this district at \$17 to \$18 in New York harbor, which serves in part to explain the lack of stability of Northern quotations. Much of the present pig iron buying consists of small tonnages, but the aggregate is fair, and in the past week sales in this district were slightly in excess of 7000 tons. The week's purchases of foundry iron included about 1000 tons by the General Electric Co. for Pittsfield, Lynn and Everett, Mass., and several hundred tons for Holyoke, Mass., by the Worthington Pump & Machinery Corporation, Harrison, N. J. Prices of eastern Pennsylvania iron in this district continue at \$17.50 to \$18 a ton, furnace, and of Buffalo iron at about \$16 a ton, furnace.

*Prices per gross ton, delivered New York district:*

Buffalo No. 2 fdy., sil.	1.75 to 2.25	\$20.91
*Buff. No. 2, del'd east.		
N. J.		19.28
East. Pa. No. 2 fdy., sil.	1.75 to 2.25	\$18.89 to 19.39
East. Pa. No. 2X fdy., sil.	2.25 to 2.75	18.89 to 19.89

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.  
\*Prices delivered to New Jersey cities having rate of \$3.28 a ton from Buffalo.

**Reinforcing Bars.**—A few moderate-sized contracts have been placed, but generally the reinforcing steel market lacks the activity of a month ago. Some large tonnages are still pending award, but little new work is coming out for bids. Prices are unchanged, ranging from 1.75c. to 1.85c., Pittsburgh, for mill shipment, and from 2.40c. to 2.50c., f.o.b. cars, New York, on most warehouse tonnages.

**Finished Steel.**—Neither the number of steel orders nor the volume has increased within the past week. The situation is still characterized by the extreme dullness which prevailed throughout July. Prices on some products continue on a somewhat erratic course, being governed in most instances by the size of the tonnage and the needs of the mills to keep up even the present low rate of operations. Pittsburgh mills, in meeting competition of Eastern mills on plates and structural shapes on the more attractive tonnages, have taken business at prices equivalent to about 1.50c., Pittsburgh, a figure that compares with some of the pre-war levels, though not with the lowest prices of that period. Sheet prices have shown further weakness. Galvanized sheets

have been sold to jobbers at 3c. and 3.05c., Pittsburgh, with 3.10c. the going price to consumers. Black sheets are not holding firmly at 2.45c., concessions of \$1 a ton having been obtained by aggressive buyers. On blue annealed sheets, weakness has also appeared, with sales of No. 10 gage at 1.90c. and 1.95c., Pittsburgh, and No. 13 gage at 2.05c. and 2.10c.

**Cast Iron Pipe.**—An easier money market for the flotation of bond issues is reflected in greater activity of municipalities, but large municipal purchasing against current bond issues is not expected to develop before fall. Meanwhile, the greater part of present buying is by the privately owned utilities. One large company has closed for upward of 3200 tons of water pipe to be laid along county roads in western Pennsylvania. While Northern foundries are maintaining 70 to 75 per cent operations with difficulty, Southern producers, who were in need of business during June and July, have booked sufficient tonnage to increase operating rates to more than 75 per cent in some cases. Prices of pressure pipe continue fairly firm, ranging from \$36 to \$37 a ton at the foundry.

*Prices per net ton deliv'd New York:*  
Water pipe, 6-in. and larger, \$38.90 to \$39.90; 4-in. and 5-in., \$41.90 to \$42.90; 3-in., \$48.90 to \$49.90. Class A and gas pipe, \$3 extra.

### Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes.....	3.10c.
Soft steel bars, small shapes.....	3.10c.
Iron bars.....	3.24c.
Iron bars, Swed. charcoal.....	7.00c. to 7.25c.
Cold-fin. shafting and screw stock—	
Rounds and hexagons.....	3.40c.
Flats and squares.....	3.90c.
Cold-roll. strip, soft and quarter hard.....	4.95c.
Hoops.....	3.75c.
Bands.....	3.40c.
Blue ann'd sheets (No. 10).....	3.25c. to 3.40c.
Black sheets (No. 24*).....	3.65c. to 3.90c.
Galvanized sheets (No. 24*).....	4.25c.
Long terme sheets (No. 24).....	5.80c.
Standard tool steel.....	12.00c.
Wire, black annealed.....	4.50c.
Wire, galv. annealed.....	5.15c.
Tire steel, ½ x ½ in. and larger.....	3.40c.
Smooth finish, 1 to 2 ½ x ¼ in. and larger.....	3.75c.
Open-hearth spring steel, bases.....	4.50c. to 7.00c.

\*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

	Per Cent Off List
Machine bolts, cut thread:	
¾ x 6 in. and smaller.....	.65
1 x 30 in. and smaller.....	.65
Carriage bolts, cut thread:	
¾ x 6 in. and smaller.....	.65
¾ x 20 in. and smaller.....	.65
Boller Tubes:	Per 100 Ft.
Lap welded, 2-in.....	\$19.00
Seamless steel, 2-in.....	20.25
Charcoal iron, 2-in.....	26.25
Charcoal iron, 4-in.....	67.00
Tin Plate (14 x 20 in.)	
Prime	Seconds
Coke, 100 lb. base box.....	\$6.45 \$6.20
Charcoal, per Box—	A AAA
IC.....	\$9.70 \$12.10
IX.....	12.00 14.25
IXX.....	13.90 16.00

**Warehouse Business.**—Price concessions on certain products are still fairly common, black and blue annealed sheets being subject to reductions of \$3 a ton and more on desirable orders and galvanized sheets \$1 to \$2 a ton. Copper sheets quoted at 20.75c. a lb., base, are also being shaded slightly. Bolts and screws quoted generally at 65 per cent off list are subject to additional discounts on desirable business, usually not more than an additional 5 per cent off.

**Coke.**—Despite curtailment of furnace coke output by operators in the Connellsville district, the market continues lacking in strength. Quotations range from \$2.50 to \$2.60 a net ton, Connellsville, with distress tonnage offered at less than \$2.50 a ton. Foundry coke is unchanged as follows:

Special brands of beehive foundry coke, \$4.85 a net ton, ovens, or \$8.56 delivered to northern New Jersey, Jersey City and Newark, and \$9.44 to New York and Brooklyn; by-product foundry coke, \$9 to \$9.40, Newark or Jersey City; \$10.06, New York or Brooklyn.

**Old Material.**—Some No. 1 heavy melting steel is moving into western Pennsylvania at \$15 a ton, delivered, or \$9.70, New York, in addition to the usual shipments of this grade to eastern Pennsylvania consumers at \$12.50, delivered, or \$9, New York, and to Buffalo by barge at \$10, on barge, New York. Following a protracted period, during which eastern Pennsylvania mills were in general withholding deliveries on their contracts, shipments have been resumed except in the case of the mill at Claymont, Del. No. 1 steel is being shipped to Coatesville, Pa., at \$12.50 a ton, delivered, No. 2 steel to Pencoyd and Conshohocken, Pa., at \$10.25, delivered, and to Harrisburg, Pa., at \$10, delivered, while yard steel is moving to Pottsville, Pa., at \$9.50, delivered, and to Phoenixville, Pa., at \$10, delivered.

*Dealers' buying prices per gross ton, f.o.b. New York:*

No. 1 heavy melting steel..	\$9.00 to \$10.00
Heavy melting steel (yard)	5.75 to 6.25
No. 1 hvy. breakable cast..	7.75 to 8.50
Stove plate (steel works)...	6.00 to 6.25
Locomotive grate bars....	6.00 to 6.50
Machine shop turnings....	5.00 to 5.25
Short shoveling turnings..	4.50 to 5.00
Cast borings (blast fur. or steel works).....	4.50 to 5.00
Mixed borings and turnings.....	4.50 to 5.50
Steel car axles.....	17.00
Iron car axles.....	19.00 to 19.50
Iron and steel pipe (1 in. dia., not under 2 ft. long)	7.25
Forge fire.....	7.50
No. 1 railroad wrought....	9.75
No. 1 yard wrought, long..	8.75
Rails for rolling.....	9.50 to 10.00
Stove plate (foundry)....	6.50
Malleable cast (railroad)...	10.50 to 11.00
Cast borings (chemical)...	8.50 to 9.00

*Prices per gross ton, deliv'd local foundries:*

No. 1 machry. cast.....	\$14.00
No. 1 hvy. cast (columns, bldg. materials, etc.); cupola size.....	12.00
No. 2 cast (radiators, cast boilers, etc.).....	11.50

# PHILADELPHIA

## Mill Operations Unchanged—Shipbuilding Brings Some Orders

**P**HILADELPHIA, Aug. 12.—Steel mills are continuing to operate at about 50 per cent of capacity in their rolling departments and at a considerably lower rate in open-hearth output. Although business has not appreciably improved, prices are being maintained with only occasional concessions on desirable orders. One plate mill in this district, which has been operating on a short week for some months, has recently booked sufficient new business from sources outside the immediate eastern Pennsylvania district to permit of returning to a full operating week.

Shipbuilding is beginning to bring out a fair tonnage of steel. Conversion of eight ships for the Moore & McCormack Co. will require about 7500 tons of plates, shapes and bars, and about 6000 tons of steel will be required soon for three Eastern Steamship Co. vessels, on which the Newport News Shipbuilding & Dry Dock Co. was low bidder. Award of six ships for the United Fruit Co. was divided between the Bethlehem Steel Co. and the Newport News Shipbuilding & Dry Dock Co. On a ship for the Red "D" line, requiring 2500 tons of steel, the General Engineering & Dry Dock Co., San Francisco, was low bidder, with the Pusey & Jones Co., Wilmington, Del., next. There is some prospect of preference being given to a builder on the Atlantic seaboard.

**Pig Iron.**—Foundry operations are irregular, some being fairly well engaged while others have found it necessary to further curtail their schedules. Quotations on foundry grade still range from \$18.50 to \$19 per ton, furnace, and Southern iron continues a factor in the market, with \$12.50 per ton, Birmingham, usually quoted, which is equivalent to \$17.75 per ton, on dock Philadelphia. Consumers of basic are still refraining from buying, apparently having a sufficient supply at present low rates of operation. Meanwhile, Buffalo sellers have offered basic iron at prices competitive with eastern Pennsylvania furnaces.

### Prices per gross ton at Philadelphia:

East. Pa. No. 2, 1.75 to 2.25 sil.	\$19.26 to \$19.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	19.76 to 20.26
East. Pa. No. 1X, 2.06 to 2.25 sil.	20.26 to 20.76
Basic (del'd east. Pa.), 1.85 to 2.25 sil.	18.50 to 21.25
Malleable	21.25
Stand. low phos. (f.o.b. east. Pa. furnace)	24.00
Cop. b'r'g low phos. (f.o.b. furnace)	23.00 to 24.00
Va. No. 2 plain, 1.75 to 2.25 sil.	22.29
Va. No. 2X, 2.25 to 2.75 sil.	22.79

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

**Steel Bars.**—Buying continues limited to small lots, but the price is firm at 1.65c. per lb., Pittsburgh, or 1.94c. per lb., delivered Philadelphia. About the only sizable orders in prospect are from the shipyards, which have recently received award of a number of small ships.

**Reinforcing Bars.**—About 200 tons of steel mesh and reinforcing bars will be required for reinforcement in the city sewer at Torresdale, Pa. Taylor-Davis, Inc., has been awarded 100 tons of bars for the Fourth Street bridge in Chester, Pa. Prices of billet steel reinforcing bars are unchanged at 1.75c. to 1.85c. per lb., Pittsburgh, or 2.04c. to 2.14c., delivered Philadelphia. Rail steel bars are quoted at 1.55c. to 1.60c. per lb., Franklin, Pa.,

or 1.84c. to 1.89c., delivered Philadelphia.

**Shapes.**—Mill operations show no improvement, but prices are less subject to concessions. On desirable orders 1.60c. per lb., f.o.b. nearest mill to consumer, is still being quoted, but on smaller business the quotation is usually 1.65c. to 1.70c. per lb., mill, or 1.71c. to 1.76c., delivered Philadelphia.

**Plates.**—Contract for an 11-ft. fabricated steel pipe line at Torresdale, Pa., requiring upward of 450 tons of plates is generally expected to go to a fabricator outside this district, as local fabricating shops are in most cases not equipped to handle such a large diameter. Shipbuilding is bringing some good plate tonnages to certain mills, but other consumers are buying only small lots. Quotations are unchanged at 1.75c. per lb., Coatesville, Pa., or 1.855c., delivered Philadelphia, with \$1 a ton concession to 1.70c., Coatesville, or 1.805c., Philadelphia, occasionally quoted on larger orders.

**Sheets.**—Consumers in this district have not registered any further increase in their production schedules and sheet prices are generally lack-

ing in firmness and subject to concessions on desirable business. Blue annealed sheets are quoted at 2.15c. per lb., Pittsburgh, or 2.44c., Philadelphia, for No. 13 gage, with reductions of \$2 a ton to 2.05c., Pittsburgh, or 2.34c., Philadelphia, on desirable orders. Blue annealed plates, No. 10 gage, are 2c., Pittsburgh, or 2.29c., Philadelphia, with concessions to 1.90c., Pittsburgh, or 2.19c., Philadelphia, on medium-sized orders. Black sheets are unchanged at 2.45c. per lb., Pittsburgh, or 2.74c., Philadelphia, but galvanized sheets are lacking in firmness and 3.10c. per lb., Pittsburgh, or 3.39c., Philadelphia, is rather generally shaded \$1 a ton to 3.05c., Pittsburgh, or 3.34c., Philadelphia, when a medium-sized order is in prospect. In certain cases jobbers have been quoted 3c. per lb., Pittsburgh, but this price is not general.

**Imports.**—In the week ended Aug. 9, a total of 5041 tons of chrome ore arrived at this port, of which 3041 tons came from Cuba and 2000 tons from Portuguese Africa. Pig iron imports were 1705 tons from British India. Steel arrivals consisted of 224 tons of reinforcing bars, 13 tons of steel bands and 10 tons of plain steel bars from Belgium, 12 tons of bearing tubing and 9 tons of steel bars from Sweden, 80 tons of structural shapes, 18 tons of steel bands and 6 tons of steel bars from France.

**Old Material.**—Transactions in scrap of all grades are still limited to lots of a few carloads. Although prices show no trend toward greater strength, sellers of scrap are not inclined to commit themselves on contracts at the present level of the market and consumers, able to satisfy their immediate requirements at the present prices, show no interest in contracting for future deliveries.

### Prices per gross ton delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel...	\$12.50 to \$13.00
No. 2 heavy melting steel...	10.00 to 10.50
Heavy melting steel (yard)	10.00
No. 1 railroad wrought...	14.75 to 15.00
Bundled sheets (for steel works)	9.50
Hydraulic compressed, new	11.00 to 11.50
Hydraulic compressed, old	9.50
Machine shop turnings (for steel works)	9.00
Heavy axle turnings (or equiv.)	11.50 to 12.00
Cast borings (for steel works and roll. mill)	8.75 to 9.00
Heavy breakable cast (for steel works)	11.50 to 12.00
Railroad grate bars...	10.00
Stove plate (for steel works)	10.00
No. 1 low phos., hvy., 0.04% and under...	20.00
Couplers and knuckles...	17.50 to 18.00
Roller steel wheels...	17.50 to 18.00
No. 1 blast f'nace scrap...	8.50
Wrot. iron and soft steel pipes and tubes (new specific.)	11.50 to 12.00
Shafting	18.00 to 18.50
Steel axles	21.00 to 21.50
No. 1 forge fire...	11.50 to 12.00
Cast iron carwheels...	14.50 to 15.00
No. 1 cast...	13.00 to 13.50
Cast borings (for chem. plant)	13.50 to 14.00
Steel rails for rolling...	13.50 to 14.00

### Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Plates, ¼-in. and heavier	2.60c.
Structural shapes	2.60c.
Soft steel bars, small shapes, iron bars (except bands)	2.70c.
Reinforc. steel bars, sq. twisted and deform.	2.60c. to 2.70c.
Cold-fin. steel, rounds and hex.	3.40c.
Cold-fin. steel, sq. and flats	3.90c.
Steel hoops	3.25c.
Steel bands, No. 12 to ¼-in. incl.	3.00c.
Spring steel	5.00c.
*Black sheets (No. 24)	3.70c.
*Galvanized sheets (No. 24)	4.25c.
Light plates, blue annealed (No. 10)	3.15c.
Blue ann'd sheets (No. 13)	3.30c.
Diam. pat. floor plates, ¼-in.	5.30c.
Swedish iron bars	6.60c.

\*For 50 bundles or more; 10 to 49 bun., 4.10c. base; 1 to 9 bun., 4.35c. base.  
†For 50 bundles or more; 10 to 49 bun., 4.95c. base; 1 to 9 bun., 5.30c. base.



# CLEVELAND

## Some Increase in Bookings, Output Up 3 Points, but Prices Weak

**C**LEVELAND, Aug. 12.—Although the daily tonnage booked by district steel offices shows a slight gain as compared with July, the market lacks virility. Automobile parts manufacturers have got some fresh business as a result of increased operations at Detroit, but in general their position still is far from satisfactory. In fact only a few companies supplying a small coterie of automobile plants have accelerated production since the first of the month. If there has been any improvement on the part of the majority of parts makers it is not reflected in orders and specifications for steel.

It is estimated that consumer plants in this district are running at 25 to 40 per cent of capacity. Cleveland steel mills are operating 16 out of 34 open-hearth furnaces this week, which is approximately 47 per cent of ingot capacity. This represents an upswing of three points from a week ago.

With producers pushing hard for business, the price structure has weakened perceptibly. Realizing the eagerness of the mills to support present rolling schedules, users have been exerting considerable pressure to gain concessions under 1.65c., Pittsburgh, for bars, plates and shapes, and reports are that this price has been shaded \$1 a ton in highly competitive territories. Light rolled products, especially black and blue annealed sheets, also are showing signs of irregularity.

In the structural steel market the outstanding award has been 12,000 tons to the Mount Vernon Bridge Co. for the Central Lorain bridge in this city. Inquiries before the trade are considered fairly good in view of the summer season and the relatively poor industrial activity.

**Pig Iron.**—Buyers are showing somewhat less interest than a week ago, with the result that both sales and fresh inquiries have fallen off. Orders have been confined almost exclusively to small lots for immediate delivery, although two bookings of 1000 tons each are reported. Pending inquiries total about 5000 tons. Dealers state that the serious drought in the Middle West has served to make consumers even more conservative with respect to buying ahead. A gain in shipments since the first of the month has been the most encouraging development in pig iron. In some cases this increase is of substantial proportions when compared with the July rate, but it loses much of its significance when it is remembered that last month shipments fell to a distressingly low point. Prices remain at \$18 for local delivery, with shading in outside competitive territories to less than \$17, Cleveland furnace. Northern foundry iron is bringing \$18 in southern Michigan and in some instances small tonnages have been sold at \$18.50.

Prices per gross ton at Cleveland:

N'th'n fdy., sil. 1.75 to 2.25	\$18.00
S'th'n fdy., sil. 1.75 to 2.25	\$18.51 to 19.51
Malleable	18.00
Ohio silvery, 8 per cent	25.50 to 26.50
Basic Valley furnace	18.50
Stand. low phos., Valley	26.50 to 27.00

Prices are f.o.b. furnace except on Southern foundry and silvery iron. Freight rates: 50c. average local switching charge; \$3 from Jackson, Ohio; \$6.01 from Birmingham.

**Iron Ore.**—Ore on the docks at Lake Erie ports Aug. 1 totaled 5,022,538 tons compared with 4,452,100 tons a year ago, states the monthly report of the Lake Superior Iron Ore Association. Ore received at Lake front furnaces during July amounted to 1,643,733 tons as against 1,815,309 tons in July, 1929. For the season to Aug. 1, Lake front furnaces have taken 3,822,339 tons compared with 5,169,376 tons in the same period last year, thus reflecting the curtailment in pig iron output. Receipts at other than Lake Erie ports for the season to Aug. 1 aggregated 7,312,710 tons as compared with 8,845,556 tons in the corresponding months of 1929.

**Bars, Shapes and Plates.**—Users are making purchases somewhat sporadically. Little new business has come from companies affiliated with the automobile industry with the exception of forge shops, which have increased orders and specifications in the past week. Some of the crane and steam shovel makers are reported to be operating at a little better rate and therefore are calling for slightly larger tonnages of steel. Tank and boiler shops continue to hold to a moderate production schedule. Steel fabricators are competing vigorously for sufficient tonnage to keep plants engaged at current levels and therefore are putting in exceptionally low prices on small as well as large jobs. Steel bars are quoted at 1.70c., Cleveland, for outside shipment and 1.75c. for local delivery. Plates and shapes are priced at 1.65c., Pittsburgh, for the general run of orders, but the number of users who are reported getting concessions of \$1 a ton is spreading.

**Warehouse Business.**—Jobbers are disappointed that the total tonnage of business this month has shown no improvement over the rate which prevailed in July. Prices have not changed.

**Bolts, Nuts and Rivets.**—Bolt and nut makers have felt an improvement in business as a result of increased activities in the automobile industry. Operations have been stepped up somewhat to conform to the betterment in orders and specifications.

**Strip Steel.**—There has been no im-

provement in demand for strip steel, despite the fact that some of the Detroit automobile factories are again back in production. Prices continue relatively weak, with cold-rolled strip being sold to important buyers at 2.35c., Cleveland. The tendency is for small lot customers also to get this price in an increasing number of cases. Hot-rolled strip seems to be holding fairly well at 1.65c., Pittsburgh, for material wider than 6 in.

**Wire Products.**—Specifications and orders are lagging, and manufacturers are anxiously scanning the agricultural situation to appraise the damage done by the drought. Meanwhile, nail prices are soft, with most business going at \$2.05 a keg, although \$2.10 prevails in a few instances. Manufacturers' wire is firm at 2.30c., Cleveland.

**Sheets.**—The situation offers little encouragement to producers. The automobile industry is taking only limited tonnages to meet the present restricted demand, and other classes of consumers also are ordering material at a rate less than normal. In an effort to get sufficient business to keep mills operating at even the current low schedule, some sellers have been making price concessions.

**Old Material.**—The trade continues to mark time until large consumers find it necessary to come into the market again. Little scrap is moving to local steel plants at the moment and slight improvement is looked for this month. The tonnage of scrap now being produced is probably at the lowest point in several years. As the month progresses and plants again are operating at a fair rate, dealers believe that more material will be available. Prices are steady and unchanged.

Prices per gross ton delivered consumers' yards:

Basic Open-Hearth Grades:		
No. 1 heavy melting steel	\$11.75 to	\$12.25
No. 2 heavy melting steel	11.25 to	11.50
Compressed sheet steel	12.25 to	12.50
Light bundled sheet		
stampings	11.00 to	11.50
Drop forge flashings	10.00 to	10.50
Machine shop turnings	8.00 to	8.50
Short shoveling turnings	9.75 to	10.25
No. 1 railroad wrought	13.00 to	13.50
No. 2 railroad wrought	14.00 to	14.50
No. 1 busheling	11.75 to	12.00
Pipes and flues	9.00 to	9.50
Steel axle turnings	12.50 to	13.00
Acid Open-Hearth Grades:		
Low phos., forging crops	17.75 to	18.00
Low phos., billet bloom and slab crops	18.50 to	18.75
Low phos., sheet bar crops	18.00 to	18.50
Low phos., plate scrap	18.00 to	18.50
Blast Furnace Grades:		
Cast iron borings	9.00 to	9.25
Mixed borings and short turnings	9.00 to	9.25
No. 2 busheling	8.75 to	9.00
Cupola Grades:		
No. 1 cast	15.00 to	15.50
Railroad grate bars	11.00 to	12.00
Stove plate	12.00 to	12.50
Rails under 3 ft.	18.50 to	19.50
Miscellaneous:		
Rails for rolling	16.25 to	16.50
Railroad malleable	16.00 to	16.50

## ST. LOUIS Pig Iron and Steel Business Light—Scrap So Dull Prices Are Nominal

**S**T. LOUIS, Aug. 12.—The pig iron market continues extremely dull, with few sales of either Northern or Southern make. The local maker is concentrating on increasing specifications by a revision of prices in contracts previously made, rather than to stir up new business, but so far has not met the recent reduction of 50c. a ton by Chicago interests. The melt in the district has been reduced, not only by a falling off in orders but also by the heat, there having been 18 days from July 9 to Aug. 8 in which the temperature has been 100 deg. or over. It is not believed that there will be much buying until September.

### Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.	\$18.00 to \$18.50
Malleable, f.o.b. Granite City	18.00 to 18.50
N'th'n No. 2 fdy., deliv'd St. Louis	19.66
Southern No. 2 fdy., deliv'd	16.42
Northern malleable, deliv'd	19.66
Northern basic, deliv'd....	19.66

Freight rates: 75c. (average) Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

**Finished Steel.**—New business in finished steel continues light, and specifications against contracts also are unsatisfactory to the mills. A few railroads have issued contracts for third quarter requirements of plates, shapes and bars, but not many specifications have been issued against them. Warehouse business for August so far is about on a par with that of last month, but less than that of a year ago. Fabricators of structural steel find few jobs here, and are turning their attention to Federal buildings in this and neighboring States. The only reinforcing job let this week was 175 tons for a nurses' home, which went to the Missouri Rolling Mills Corporation.

### Old Material.—Prices of old mate-

### Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and struc. shapes.....	3.25c.
Bars, soft steel or iron.....	3.15c.
Cold-fin. rounds, shafting, screw stock .....	3.60c.
Black sheets (No. 24).....	4.25c.
Galv. sheets (No. 24).....	4.85c.
Blue ann'd sheets (No. 10).....	3.45c.
Black corrug. sheets (No. 24).....	4.30c.
Galv. corrug. sheets.....	4.90c.
Structural rivets .....	4.15c.
Boiler rivets .....	4.15c.

### Per Cent Off List

Tank rivets, 7/8-in. and smaller, 100 lb. or more .....	65
Less than 100 lb.....	60
Machine bolts .....	60
Carriage bolts .....	60
Lag screws .....	60
Hot-pressed nuts, sq., blank or tapped, 200 lb. or more.....	60
Less than 200 lb.....	50
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more.....	60
Less than 200 lb.....	50

rial are unchanged, but most of the quotations are nominal, because there is so little trading. For example, the largest consumer of No. 1 busheling, cast iron borings and shoveling turnings has been out of the market for more than a month, and it will be several months before this factor will resume buying. Dealers are making busheling and storing it. It would be difficult to determine the market on these items now. Mills are said to be willing to buy melting steel at present prices, but dealers are unwilling to sell.

Railroad lists are reported to have brought better prices. New lists follow: Chesapeake & Ohio, 5249 tons; Louisville & Nashville, 2780 tons; Wabash, 1691 tons; Ann Arbor, 152 tons; New York, Chicago & St. Louis, 29 carloads; Great Northern, 20 carloads; Nashville, Chattanooga & St.

Louis, 9 carloads; and Pullman Co., St. Louis, 9 carloads.

### Dealers' buying prices per gross ton, f.o.b. St. Louis district:

Selected heavy melting steel .....	\$11.00 to \$11.50
No. 1 heavy melting or shoveling steel .....	10.75 to 11.25
No. 2 heavy melting or shoveling steel .....	10.00 to 10.50
No. 1 locomotive tires.....	13.00 to 13.50
Misc. stand.-sec. rails in- cluding frogs, switches and guards, cut apart.....	11.25 to 11.75
Railroad springs .....	13.75 to 14.25
Bundled sheets .....	7.50 to 8.00
No. 2 railroad wrought.....	10.75 to 11.25
No. 1 busheling.....	9.00 to 9.50
Cast iron borings and shoveling turnings.....	8.50 to 9.00
Iron rails .....	10.00 to 11.00
Rails for rolling.....	12.00 to 12.50
Machine shop turnings.....	6.00 to 6.50
Heavy turnings .....	8.50 to 9.00
Steel car axles.....	15.50 to 16.00
Iron car axles.....	24.50 to 25.00
Wrot. iron bars and trans. No. 1 railroad wrought.....	14.50 to 15.00
Steel rails, less than 3 ft.....	8.00 to 8.50
Steel angle bars.....	13.50 to 14.00
Cast iron carwheels.....	10.75 to 11.25
No. 1 machinery cast.....	12.00 to 12.50
Railroad malleable .....	10.50 to 11.00
No. 1 railroad cast.....	11.00 to 11.50
Stove plate .....	9.50 to 10.00
Relay. rails, 60 lb. and under .....	20.50 to 23.50
Relay. rails, 70 lb. and over .....	26.50 to 29.00
Agricult. malleable .....	10.00 to 10.50

## PACIFIC COAST

Bottom Believed to Have Been Reached in Demand for Steel

**S**AN FRANCISCO, Aug. 9.—(By Air Mail.)—Although movement of iron and steel products on the Pacific Coast has not been heavy of late, a more optimistic undercurrent is noticeable. Those in close touch with the situation are of the opinion that the bottom has been reached, and that demand will continue to improve during the remainder of the year. No change in the price situation is reported.

Awards of reinforcing steel bars were limited to two lots of 100 tons or more. The Concrete Engineering Co. secured 100 tons for a hospital addition at Redwood City, Cal., and an unnamed interest took 100 tons for highway work in San Luis Obispo County, Cal. About 300 tons of bars are involved in a factory for the Procter & Gamble Co. at Long Beach, Cal. Prices on out-of-stock material in the San Francisco district appear firm at 2.50c., base, on carload lots. Movement of merchant steel bars continues restricted to unimportant tonnages. Prices on this class of material are firm at 2.25c., c.i.f.

The Western Pipe & Steel Co. secured 2000 tons of 36 and 40-in., 3/8 and 7/16-in. plate, for a welded steel pipe line for Los Angeles. The Consolidated Steel Corporation booked 800 tons of plates and shapes for boilers for a steam plant for Los Angeles. The General Engineering Co. was low bidder on a ship for the Red D Line involving 1500 tons of plates and shapes. Prices continue to range from 2.15c. to 2.25c., c.i.f.

The majority of structural awards this week called for lots of less than 100 tons. The Consolidated Steel Cor-

### Pig Iron Prices Per Gross Ton at San Francisco

*Utah basic .....	\$22.00 to \$24.00
*Utah fdy., sil. 2.75 to 3.25 .....	22.00 to 24.00
**Indian fdy., sil. 2.75 to 3.25 .....	22.00 to 24.00

\*Delivered San Francisco.

\*\*Duty paid, f.o.b. cars San Francisco.

poration secured 1600 tons for a factory at Long Beach for the Procter & Gamble Co. and 600 tons for an addition to the Ford plant in the same city. The Minneapolis Moline Power & Implement Co. booked 150 tons for a Masonic Temple at Santa Ana, Cal. Bids were opened this week on 1800 tons for a State building in Los Angeles, on 450 tons for an addition to the Bank of Italy, San Francisco, and on 400 tons for Pier No. 1, San Francisco. Plain shapes now range from 2.15c. to 2.25c., c.i.f., the former figure applying on large lots.

**Cast Iron Pipe.**—Several fair-sized jobs were recently placed. San Francisco has awarded 771 tons of 6 and 8-in pipe to the American Cast Iron Pipe Co. and 260 tons of 6-in. and 10-in. to the United States Pipe & Foundry Co. Evans, Coleman & Evans

### Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and struc. shapes.....	3.40c.
Soft steel bars.....	3.40c.
Black sheets (No. 24).....	4.35c.
Blue ann'd sheets (No. 10).....	3.80c.
Galv. sheets (No. 24).....	5.00c.
Struc. rivets, 1/2-in. and larger.....	5.00c.
Com. wire nails, base per keg.....	3.35c.
Cement c'd nails, 100 lb. keg.....	3.35c.



booked 537 tons of 6-in. pipe for Vancouver, B. C. The United States Pipe & Foundry Co. was low bidder on 226 tons of 30-in. pipe for Whittier, Cal. Glendale, Cal., will open bids Aug. 14 on 783 tons of 6 to 12-in. pipe.

**Track Material.**—The Seattle Municipal Railroad has opened bids on 500 tons of 60 and 80-lb. rails. The Colorado Fuel & Iron Co. has shipped 600 tons of rails and angles to Valparaiso, Chile.

**Coke.**—The number of by-product coke ovens in operation by the Tennessee company has been increased from 217 to 342. This makes a total of 1046 active ovens in the district of a grand total of 1390. Shipments this month are averaging slightly better than in July, the lightest month of the year. Prices are unchanged from the base of \$5 a ton, Birmingham.

## BIRMINGHAM Steel Orders in Fairly Steady Volume —Pig Iron Buying Hand to Mouth

BIRMINGHAM, Aug. 14.—Foundries continue to base their pig iron purchases on requirements for actual orders booked. No large orders are being placed, and forward contracting is rarely heard of. Nearly all requirements for the last two weeks of August are yet to be sold. A few jobbing foundries are taking up operations again to work off orders accumulated during four to five weeks of idleness. As a result, the shipments are showing a little improvement, but the movement is still below production. District sales still carry a price of \$14, base. Fourteen furnaces are still active. Of this number nine are on foundry iron, four on basic and one on recarburizing iron.

Prices per gross ton, f.o.b. Birmingham dist. furnaces:

No. 2 fdy., 1.75 to 2.25 sil.....	\$14.00
No. 1 fdy., 2.25 to 2.75 sil.....	14.50
Basic .....	14.00

**Finished Steel.**—There is but little change in new business from that of a week ago. Orders are in small tonnages, but the steadiness of the volume and the quickness with which inquiries are converted into orders produces a better feeling in the market. Operations are largely gaged by demand. Sheet demand has shifted a little from blue and box annealed sheets to galvanized sheets, though the demand for the latter is being retarded by hot, dry weather and unfavorable crop conditions. The sheet-producing capacity of the district will be increased by about 7000 tons a month when the new mill of the Gulf States Steel Co. goes on commercial operations this week. The dull period in wire products is passing slowly, but gains in jobber demands are slight. All quotations are the same as a week ago. Active open-hearths are unchanged, a total of 13 being active.

Structural steel demand is off, the shrinkage being in the large jobs. Two or three sizable projects have been lately withdrawn from the market. Steel for a 26-story building at Atlanta is reported to have been awarded to an Eastern fabricator. Reinforcing bar demand is largely from road and bridge sources, the aggregate being light.

**Cast Iron Pipe.**—New orders of the American Cast Iron Pipe Co. include 900 tons for Baton Rouge, La., 750 tons for San Francisco and 80 tons for Birmingham, Mich. The National Cast Iron Pipe Co. is low bidder on 450 tons for Nashville, Tenn. The

United States Pipe & Foundry Co. has booked 100 tons for St. Paul, Minn. Plants here have bids in on the projects at Dayton, Ohio, to require about 2000 tons. New projects that developed last week include 4500 ft. of 8-in. and 3200 ft. of 6-in. pipe for Tuscaloosa, Ala., and about 100 tons for Columbia, Tenn., to be bought by the Tennessee Electric Power Co. Estimates will soon be ready for bids in Texas points, including Houston and Beaumont. A number of projects are being held back by Southern cities which have not yet found it advisable to sell bonds already voted. Prices are unchanged from the base of \$37 to \$38, Birmingham.

**Old Material.**—Shipments to steel mills are better than they were last month, but they are still closely restricted, with little indications of improvement. In the cast iron grades there are only a few small shipments. Actual prices are still uncertain because of lack of trading sufficient to test them.

Prices per gross ton deliv'd Birmingham dist. consumers' yards:

Heavy melting steel.....	\$12.00
Scrap steel rails.....	\$12.50 to 13.00
Short shovelling turnings..	9.00
Cast iron borings.....	9.00
Stove plate .....	11.50 to 12.00
Steel axles .....	20.00
Iron axles .....	23.00
No. 1 railroad wrought....	10.00 to 10.50
Rails for rolling.....	14.50
No. 1 cast.....	13.00
Tramcar wheels .....	12.50
Cast iron carwheels.....	13.00 to 13.50
Cast iron borings, chem....	13.50 to 14.00

## BOSTON Pig Iron Buying in Larger Volume—Scrap Prices Unchanged for Third Week

BOSTON, Aug. 12.—Recent expectations of pig iron sellers of an improvement in buying were realized to some degree in the past week, when sales amounted to more than 4000 tons. Further buying is looked for. The Mystic Iron Works was the seller of about 2500 tons of the week's total, while the remainder was sold by Buffalo furnaces. Deliveries extend over several months. The price situation seems to be fairly firm at \$16, Buffalo base, though a number of prospective

buyers are feeling out of the market on the theory that better prices may be available. A peculiarity of the situation is that no open inquiries exist, but rather there is a conversational feeling out of conditions. Foundries are running on small stocks of iron, which strengthens the belief that further improvement in buying is to be expected.

Foundry iron prices per gross ton deliv'd to most New England points:

†Buffalo, sil. 1.75 to 2.25...	\$20.28
†Buffalo, sil. 2.25 to 2.75...	\$20.28 to 20.75
*Buffalo, sil. 1.75 to 2.25...	20.91
*Buffalo, sil. 2.25 to 2.75...	20.91 to 21.41
Va., sil. 1.75 to 2.25.....	25.21
Va., sil. 2.25 to 2.75.....	25.71
*Ala., sil. 1.75 to 2.25.....	22.61
*Ala., sil. 2.25 to 2.75.....	23.11
†Ala., sil. 1.75 to 2.25.....	18.75
†Ala., sil. 2.25 to 2.75.....	19.25

Freight rates: \$4.91 all rail and \$4.28 rail and water from Buffalo; \$5.21 all rail from Virginia; \$9.61 all rail from Alabama and \$5.75 rail and water from Alabama to New England seaboard.

\*All rail rate.  
†Rail and water rate.

**Cast Iron Pipe.**—Among the contracts placed in the past week was one of 800 tons, 6 to 16-in. pipe for Saugus, Mass., awarded to Warren Foundry & Pipe Co. The 140 tons of 8-in. pipe wanted by Portsmouth, N. H., was awarded to R. D. Wood & Co. Providence, R. I., closed bids Aug. 8 on 2000 tons of various sizes, with no award as yet.

**Reinforcing Bars.**—The only contract awarded calls for 155 tons for a physics laboratory at Harvard University, Cambridge, Mass., while another 400 tons is still pending for a dormitory at the same institution.

### Warehouse Prices, f.o.b. Boston

	Base per Lb.
Plates .....	3.365c.
Structural shapes—	
Angles and beams.....	3.365c.
Tees .....	3.365c.
Zees .....	3.465c.
Soft steel bars, small shapes....	3.265c.
Flats, hot-rolled .....	4.15c.
Reinforcing bars .....	3.265c. to 3.54c.
Iron bars—	
Refined .....	3.265c.
Best refined .....	4.60c.
Norway rounds .....	6.60c.
Norway squares and flats.....	7.10c.
Spring steel—	
Open-hearth .....	5.00c. to 10.00c.
Crucible .....	12.00c.
Tie steel .....	4.50c. to 4.75c.
Bands .....	4.015c. to 5.00c.
Hoop steel .....	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hex.....	*3.55c. to 5.55c.
Squares and flats...*	4.05c. to 7.05c.
Toe calk steel.....	6.00c.
Rivets, structural or boiler.....	4.50c.
Per Cent Off List	
Machine bolts .....	50 and 5
Carriage bolts .....	50 and 5
Lag screws .....	50 and 5
Hot-pressed nuts .....	50 and 5
Cold-punched nuts .....	50 and 5
Stove bolts .....	70 and 10

\*Including quantity differentials.

The price situation remains unsatisfactory.

**Old Material.**—For the third week a firm price situation has existed, but without indications of a pickup in business. It is the belief of some of the leading brokers and dealers that the bottom has been reached, and they look for a slightly firmer price range.

*Buying prices per gross ton, f.o.b. Boston rate shipping points:*

No. 1 heavy melting steel..	\$8.50 to	\$9.00
Scrap T rails.....	8.25 to	9.10
Scrap girder rails.....	7.50 to	8.10
No. 1 railroad wrought...	7.00 to	7.50
Machine shop turnings...	4.00 to	4.35
Cast iron borings (steel works and rolling mill)	4.00 to	4.35
Bundled skeleton, long...	6.00 to	6.75
Forge flashings.....	7.25 to	7.60
Blast furnace borings and turnings.....	3.10 to	4.10
Forge scrap.....	6.10 to	6.50
Shafting.....	13.00 to	14.50
Steel car axles.....	16.00 to	17.00
Wrought pipe, 1 in. in diameter (over 2 ft. long)	6.50 to	7.10
Rails for rolling.....	9.00 to	9.25
Cast iron borings, chemical	9.00 to	9.25

*Prices per gross ton deliv'd consumers' yards:*

Textile cast.....	\$11.50 to	\$12.00
No. 1 machinery cast.....	13.50 to	14.00
No. 2 machinery cast.....	11.00 to	11.50
Stove plate.....	8.50 to	9.50
Railroad malleable.....	16.00 to	16.25

## Opens New Foundry for Manufacture of Hastelloys

Haynes Stellite Co., a unit of Union Carbide & Carbon Corporation, has announced the completion of a new foundry at its Kokomo (Ind.) Works for the manufacture of the Hastelloys, a group of new acid resistant alloys. Of these, Hastelloy "A" is said to be the only alloy, available commercially, which resists the action of both hot and cold hydrochloric acid, while Hastelloy "C" resists the action of wet chlorine.

## Trackwork Shipments Decline in July

The American Iron and Steel Institute reports that trackwork shipments in July for rail track of 60 lb. per yd. or heavier totaled 8774 net tons, compared with 10,553 tons in June and with 13,844 tons in July, 1929. The total for seven months this year is 45,634 tons, against 61,830 in the corresponding period of 1929, a decline of 16,196 tons, or more than 26 per cent.

### Warehouse Prices, f.o.b. Buffalo

Base per Lb.	
Plates and struc. shapes.....	3.25c.
Soft steel bars.....	3.15c.
Reinforcing bars.....	2.95c.
Cold-fin. flats and sq.....	3.65c.
Rounds and hex.....	3.15c.
Cold-rolled strip steel.....	5.85c.
Black sheets (No. 24).....	4.20c.
Galv. sheets (No. 24).....	4.85c.
Bands.....	3.50c.
Hoops.....	3.90c.
Blue ann'd sheets (No. 10).....	3.50c.
Com. wire nails, base per keg.....	\$3.20
Black wire, base per 100 lb.....	3.50

## CINCINNATI Further Weakness Appears in Pig Iron Prices—Slight Gain in Sheet Orders

CINCINNATI, Aug. 12.—The district pig iron market continues to be sluggish. Consumers are not anticipating their needs beyond 30 days and are inquiring widely before placing orders. In many instances buyers are refusing to consider first quotations and are demanding more favorable prices. Last week district furnace representatives sold approximately 1880 tons, all in scattered lots to cover immediate needs. Prices are soft on both Northern and Southern iron. On fair-sized tonnages \$12, base Birmingham, has been accepted, and some concessions have been granted to tonnage purchasers of Northern iron. On small tonnages, however, furnaces are adhering fairly well to schedules.

*Prices per gross ton, deliv'd Cincinnati:*

So. Ohio fdy., sil. 1.75 to 2.25	\$20.89 to \$21.39
Ala. fdy., sil. 1.75 to 2.25	15.69 to 16.69
Ala. fdy., sil. 2.25 to 2.75	16.19 to 17.19
Tenn. fdy., sil. 1.75 to 2.25	15.69 to 16.69
S'th'n Ohio silvery, 8 per cent	24.39

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

**Coke.**—There is no new activity in the coke market. Specifications continue to be slow, reflecting the low melt. A Wise County oven is reported to have 300 tons of furnace coke in distress and has offered it at 25c. under the market.

**Finished Steel.**—A small increase in bookings of district sheet mills is reported. This demand is about 45 per cent of capacity, but no change in production has been announced. A slight increase in activity in the radio field and the return of several automobile plants to production have brought part of the increase in orders. A local mill which has been down for 10 days has reopened. The

### Warehouse Prices, f.o.b. Cincinnati

Base per Lb.	
Plates and struc. shapes.....	3.25c.
Bars, soft steel or iron.....	3.15c.
New billet reinf. bars.....	3.15c.
Rail steel reinf. bars.....	3.00c.
Hoops.....	3.90c.
Bands.....	3.35c.
Cold-fin. rounds and hex.....	3.80c.
Squares.....	4.30c.
Black sheets (No. 24).....	4.05c.
Galvanized sheets (No. 24).....	4.90c.
Blue ann'd sheets (No. 10).....	3.45c.
Structural rivets.....	4.20c.
Small rivets.....	60 per cent off list
No. 9 ann'd wire, per 100 lb.....	\$3.00
Com. wire nails, base per keg (25 kegs or more).....	2.95
Cement c't'd nails, base 100 lb. keg	2.95
Chain, per 100 lb.....	10.25
Net per 100 Ft.	
Lap-welded steel boiler tubes, 2-in.	\$16.50
4-in. ....	34.50
Seamless steel boiler tubes, 2-in.	17.50
4-in. ....	36.00

State of Kentucky placed an order last week with the Newport Rolling Mill Co. for about 200 tons of sheets for license plates.

**Old Materials.**—New business is very small, and most purchases are to cover on old contracts. The Norfolk & Western Railroad is offering about 8200 tons and the Southern Railway is offering its usual list.

*Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:*

Heavy melting steel.....	\$11.25 to \$11.75
Scrap rails for melting.....	11.75 to 12.25
Loose sheet clippings.....	7.75 to 8.25
Bundled sheets.....	9.75 to 10.25
Cast iron borings.....	7.75 to 8.25
Machine shop turnings.....	7.25 to 7.75
No. 1 busheling.....	9.50 to 10.00
No. 2 busheling.....	6.00 to 6.50
Rails for rolling.....	13.00 to 13.50
No. 1 locomotive tires.....	13.50 to 14.00
No. 2 railroad wrought.....	11.25 to 11.75
Short rails.....	17.00 to 17.50
Cast iron carwheels.....	12.00 to 12.50
No. 1 machinery cast.....	17.50 to 18.00
No. 1 railroad cast.....	14.50 to 15.00
Burnt cast.....	8.25 to 8.75
Stove plate.....	8.25 to 8.75
Brake shoes.....	8.25 to 8.75
Agricultural malleable.....	14.00 to 14.50
Railroad malleable.....	15.00 to 15.50

## BUFFALO Steel Operations Steady but Show No Gain—Pig Iron Buying Slow

BUFFALO, Aug. 12.—Large pig iron inquiries are lacking and new orders are in small volume. July shipments from Buffalo furnaces were the lowest in many years. Early August shows no great improvement, but makers believe an increased tonnage will be moved in the latter half of the month. Several fleets of barges have been lined up to move iron after Aug. 15. Eight furnaces continue in operation here, with no indication of an early change in schedules. The price situation is unchanged, with \$18.50 the going quotation on district business and \$16 reported to be the minimum on Eastern inquiry.

*Prices per gross ton, f.o.b. furnace:*

No. 2 fdy., sil. 1.75 to 2.25	\$18.50
No. 2X fdy., sil. 2.25 to 2.75	19.00
No. 1 fdy., sil. 2.75 to 3.25	20.00
Malleable, sil. up to 2.25	19.00
Basic.....	17.50
Lake Superior charcoal.....	27.25

**Finished Steel.**—Operations hold at 59 per cent of open-hearth capacity in the Buffalo district. Most of the mills are on single turn, with indications that similar schedules will be continued, during the rest of this month. There has been some improvement in the demand for structural shapes. The business scheduled for early closing includes one lot of 450 tons for a Niagara Falls high school and about 3500 tons for the new Ford plant here. Several jobs of smaller size are also being negotiated. Reinforcing bar sales continue below the seasonal average. The largest new inquiry reported this month is one of 172 tons for the Niagara Falls high school, while an inquiry for 1000 tons for a new Buffalo elevator is still reported open. Road



contracts which have been awarded this month in Buffalo and vicinity will result in orders for about 500 tons of reinforcing material.

**Old Material.**—A sale of several thousand tons of machine shop turnings to a Buffalo district consumer is reported to have brought \$9.75. A fair-sized sale of short shoveling turnings was made by a Buffalo dealer at a little higher price. While these prices are slightly lower than last reported on similar contracts, they are higher than had been anticipated on the basis of recent offerings of dealers to buy these materials. No additional purchases of heavy melting steel scrap have been made locally by the leading consumer, possibly because of large receipts by Lake steamers and canal barges. Specialties are moving in small lots within price ranges which have been quoted recently.

*Prices per gross ton, f.o.b. Buffalo consumers' plants:*

Basic Open-Hearth Grades:		
No. 1 heavy melting steel.	\$12.75 to	\$13.25
No. 2 heavy melting scrap.	11.00 to	11.50
Scrap rails	12.00 to	12.50
Hydraulic comp. sheets.	11.25 to	12.25
Hand bundled sheets.	9.00 to	9.50
Drop forge flashings.	11.00 to	11.50
No. 1 busheling.	11.25 to	12.50
Hvy. steel axle turnings.	11.00 to	11.50
Machine shop turnings.	6.00 to	7.00
No. 1 railroad wrought.	10.00 to	10.50
Acid Open-Hearth Grades:		
Knuckles and couplers.	15.00 to	15.50
Coil and leaf springs.	15.00 to	15.50
Rolled steel wheels.	15.00 to	15.50
Low phos. billet and bloom ends	16.50 to	17.00
Electric Furnace Grades:		
Short shov. steel turnings.	9.75 to	10.25
Blast Furnace Grades:		
Short mixed borings and turnings	9.00 to	9.50
Cast iron borings.	9.00 to	9.50
No. 2 busheling.		7.00
Rolling Mill Grades:		
Steel car axles.	16.00 to	16.50
Iron axles	19.00 to	19.50
Cupola Grades:		
No. 1 machinery cast.	12.50 to	13.00
Stove plate	10.25 to	10.50
Locomotive grate bars.	9.00 to	9.50
Steel rails, 3 ft. and under	16.00 to	16.50
Cast iron carwheels.	13.50 to	14.00
Malleable Grades:		
Industrial	15.50 to	16.00
Railroad	15.50 to	16.00
Agricultural	15.50 to	16.00
Special Grades:		
Chemical borings	11.50 to	12.00

## Steel Corporation's Unfilled Orders Increase

An increase in the unfilled orders of the United States Steel Corporation was registered in July after several months of successive decreases. On July 31, the unfilled orders were 4,022,055 tons, an increase of 53,991 tons over the 3,968,064 tons on June 30. A year ago the total was 4,088,177 tons. Unfilled tonnage at the end of each month for the past two years and seven months follows:

	1930	1929	1928
December	4,417,193	3,976,712	
November	4,125,345	3,673,000	
October	4,086,562	3,751,030	
September	3,902,581	3,698,368	
August	3,658,211	3,624,043	
July	4,022,055	4,088,177	3,570,927
June	3,968,064	4,256,910	3,637,000
May	4,059,227	4,304,167	3,416,822
April	4,354,220	4,427,763	3,872,133
March	4,570,653	4,410,718	4,335,206
February	4,479,748	4,144,341	4,398,189
January	4,468,710	4,109,487	4,275,947

## CANADA

Pig Iron Buying Slow, with Melt Down to About 50 Per Cent

**TORONTO, Aug. 12.**—While there was a slight gain in demand for merchant pig iron in the Canadian markets during the past week, business in general continued spotty. Melters are confining their purchases to immediate requirements, and orders are for one or two car lots. The melt is now down to about 50 per cent, with consumption of foundry and malleable iron correspondingly low.

*Prices per gross ton:*

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75.	\$22.60
No. 2 fdy., sil. 1.75 to 2.25.	22.10
Malleable	22.60
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75.	\$24.00
No. 2 fdy., sil. 1.75 to 2.25.	23.50
Malleable	24.00
Basic	22.50
Imported Iron, Montreal Warehouse	
Summerlee	\$33.50
Carron	33.00

**Structural Steel.**—Current demand runs mostly to lots of 100 to 200 tons, but inquiries indicate that orders are in prospect for several lots ranging from 1000 to 5000 tons. Bridge work

is responsible for a good part of the present and prospective demand.

**Old Material.**—With mills curtailing operations, there has been a noticeable drop in steel scrap sales in the past week or two. The Hamilton consumer is taking small quantities from dealers, but the bulk of its buying is from the railroads. Prices are unchanged.

*Dealers' buying prices for old material: Per Gross Ton*

	Toronto	Montreal
Heavy melting steel.	\$9.00	\$8.00
Rails, scrap.	10.00	8.00
No. 1 wrought.	9.00	11.00
Machine shop turnings.	6.00	5.00
Boiler plate.	7.00	6.50
Heavy axle turnings.	7.00	6.00
Cast borings.	6.50	5.00
Steel borings.	6.50	6.00
Wrought pipe.	4.00	4.00
Steel axles.	10.00	13.00
Axles, wrought iron.	12.00	15.00
No. 1 machinery cast.		12.00
Stove plate		10.00
Standard carwheels.		10.50
Malleable		10.00

*Per Net Ton*

No. 1 mach'ry cast.	11.00	....
Stove plate.	9.00	....
Standard carwheels.	10.00	....
Malleable scrap	9.00	....

## Fewer Locomotives Shipped and on Order

Railroad locomotives shipped from the principal manufacturing plants in July numbered only 56, according to reports received by the Department of Commerce. This compares with 81 in June and is the lowest figure since the 48 of last January. With that exception it is the lowest since March, 1929, when only 35 units were shipped. In July of last year the number was 69.

Only one unit in July, as in June, was shipped for export. This compares with 27 in July, 1929, and 19 in June, 1929. So far this year 12 locomotives have been shipped for export, against 66 in the first seven months of 1929.

Three electric locomotives were included in the domestic list in July—the first of this type since March. The total for seven months is nine units, against 19 in the same period last year.

In spite of the falling off in July, the record in total shipments for the seven months far surpassed that of 1929, with 475 units, against 388. The gain of 87 units this year is nearly 23 per cent. However, the last five months of last year showed heavy shipments, averaging more than 90 a month, against only 55 a month in the first seven months. So far this year the monthly average has been 68.

Unfilled orders at the end of July totaled 291 units, the smallest in 18 months. The drop from 343 in June was about 15 per cent. The total was not quite half that at the end of January, when orders called for 587. Of the total on July 31 domestic units

accounted for 284 and export units for seven. Four of the export locomotives and 41 of the domestic are electric.

## Shipbuilding Contracts and Construction Gain

Department of Commerce reports that on July 1 American shipyards were building or had contracts to build for private shipowners 263 steel vessels of an aggregate of 475,903 gross tons, compared with 251 steel vessels of 477,053 gross tons one month previous. In addition there were under construction or under contract 28 wood vessels of a total of 10,699 gross tons.

## Coal Stocks for 28 Days

Bituminous coal supplies in industrial hands, as of July 1, are estimated by the National Association of Purchasing Agents as equivalent to 28 days of consumption at current rates. By-product coke plants had 26 days' supplies; electric utilities, 42 days; coal gas plants, 51 days; railroads, 20 days; steel mills, 34 days, and other industries, 30 days.

These stocks for the United States and Canada are figured at 31,500,000 net tons, which is about the same as on April 1, but somewhat more than in the intervening period. The figure is almost the same as that of one year earlier. Consumption during June was given at 31,613,000 tons, while production of coal in the United States was placed at 38,897,000 tons.

## Simonds to Build New \$1,500,000 Saw Factory

One of the largest saw manufacturing plants in the world is to be built immediately by the Simonds Saw & Steel Co. at Fitchburg, Mass., where the industry was founded nearly a century ago.

Announcement of the purchase of a large tract of land, located in the easterly section of Fitchburg, along the line of the Fitchburg division of the Boston & Maine Railroad is accompanied by the statement that an entirely new plant for the manufacture of saws, machine knives, and files will be built on the site. Plans have been completed after an extensive survey by engineers.

The new Simonds factory, it is estimated, will cost about \$1,500,000. Two large factories, located in Fitchburg, will be vacated as soon as the new manufacturing group is completed. The plant of this company in Chicago will also be made a part of the new consolidated plant and will occupy a prominent part of the proposed manufacturing program.

## New Chicago Switching Rates in Effect

The rate on manufactured iron and steel products from the limit of the Chicago switching district in a zone 20 miles beyond is 8c. a 100 lb. and in a zone 40 miles 10c. a 100 lb. These rates were put into effect July 28 as a compromise between steel producers and the railroads. This brings to an end a controversy over rates proposed by the carriers on the basis of the decision in the general iron and steel rate case applying to iron and steel throughout official classification territory.

## Offer for Oil Well Supply on 1 for 6 Share Basis

The United States Steel Corporation will offer to pay \$6,865,800 in cash, and 64,992 shares of its common stock for the business of the Oil Well Supply Co., Pittsburgh, according to a letter sent to stockholders of the latter company by Benjamin F. Harris, its president. The Steel Corporation's option on the purchase expires Aug. 25. The offer is equivalent to one share of Steel common for six

shares of the supply company. The latter has \$6,065,800 of 7 per cent cumulative preferred stock outstanding, and \$800,000 in 6 per cent debentures of the Wilson-Snyder Mfg. Co., a subsidiary. Thus, the par value of debentures and preferred stock is equivalent to the cash to be paid in the transaction.

## New Refractories Research Laboratory at Sheffield

Sheffield's progress in steel manufacture has recently called for equal progress in refractory materials for furnace linings, and one of the latest developments of the University of Sheffield is the establishment of the new research laboratories to meet this need. Prof. C. H. Desch, dean of the faculty of metallurgy, speaking at the opening of the laboratories recently, pointed out that high-frequency induction furnaces were coming to play an important part in steel manufacture. It has been found possible, in such furnaces, to melt not only steel, but also the most refractory crucible. As metallurgical processes develop, it will be necessary to find materials capable of withstanding much higher temperatures than at present—super-refractories, in fact—and it is only possible to get them in a well-equipped research laboratory.

The department of refractory materials at Sheffield is the only one at an English university devoted wholly to work on such materials. It has been in operation since 1917 and, although it has been hampered by lack of accommodation, it is calculated that its work has already been the means of saving the iron and steel industry of Great Britain about \$1,250,000 a year.

The Patterson Tool & Supply Co., Dayton, Ohio, has been the subject of some publicity calculated to indicate that it had changed its name. William Blake Patterson, president and treasurer, who has been with the company since its inception, states that there was a reorganization last April but that the company is still occupying the field that it has covered for the past 50 yr. In connection with its stock of machinery, tools and supplies, the firm has recently taken on the exclusive representation of several German machine tool manufacturers for the whole of the United States.

## Cincinnati A.S.M.E. Section Names Committees

The executive committee for the 1930-31 session of the Cincinnati section of the American Society of Mechanical Engineers is made up of R. E. W. Harrison, chief engineer, Cincinnati Grinders, Inc., chairman; H. C. Uihlein, Cincinnati Engineering Tool Co., vice-chairman; Prof. C. Albert Joerger, University of Cincinnati, secretary and treasurer. Robert J. Gordon, Procter & Gamble Co., and George A. Seyler, Lunkenheimer Co., are also members of the executive committee.

Activities of the Cincinnati section during the coming session will be directed by the following committees:

**Membership.**—F. S. Haas, Cincinnati Grinders, Inc., chairman; E. D. Vancil, Cincinnati Milling Machine Co.; Tom Addison, Cincinnati Grinders, Inc.

**Papers and Program.**—H. C. Uihlein, Cincinnati Engineering Tool Co., chairman; George F. Lockeman, Procter & Gamble Co.; George A. Seyler, Lunkenheimer Co.; Harry A. Feldbush, Worthington Pump & Machinery Corporation; and N. Guy Randle, Champion Coated Paper Co., Hamilton, Ohio.

**Educational Committee.**—John T. Faig, president of departments, Ohio Mechanics Institute, chairman; Prof. C. Albert Joerger, University of Cincinnati; and M. B. Robinson, Cincinnati Milling Machine Co.

The committee to cooperate with the local ordinance committee is headed by Samuel Richmond, Edwards Mfg. Co. Other members are: R. O. Rickwood, Yale & Towne Mfg. Co., and Robert J. Gordon, Procter & Gamble Co. E. F. DuBrul, general manager, National Machine Tool Builders Association, will represent the interests of the society in any situation which may arise during the coming session relative to the proposed registration and licensing of engineers. Bruce E. Maxon, American Machinery Co., will take charge of all relations between the Engineers' Club of Cincinnati and the A.S.M.E. Publicity and recording of technical matters is in the charge of John M. Krings, Cincinnati Milling Machine Co.

The next regular meeting of the Steel Founders' Society of America will be held at the William Penn Hotel, Pittsburgh, Sept. 10 and 11. The regular October meeting will be held at the Pennsylvania Hotel, New York, on Thursday, Oct. 23, the day preceding the New York meeting of the American Iron and Steel Institute.

Congdon & Carpenter Co., Providence, R. I., distributor of steel products, is opening a new warehouse at 405 Promenade Street, that city, today (Aug. 14). A formal reception is being held.

## Iron and Steel Production of Canada

(In Gross Tons)

	June, 1930	May, 1930	First Six Months	
			1930	1929
Pig iron.....	66,081	80,505	451,186	518,557
Ferroalloys.....	11,059	7,766	44,960	40,951
Steel ingots.....	91,694	86,039	591,112	703,600
Steel castings.....	3,627	5,652	37,881	35,242
Total steel.....	95,321	91,691	625,993	738,842
Blast furnace charges:				
Ore (all imported).....	114,063	145,087	810,036	.....
Coke, total, net tons.....	66,954	82,062	481,800	.....
Limestone, net tons.....	33,444	41,112	245,278	.....

From Dominion Bureau of Statistics, Ottawa.



# Non-Ferrous Metal Markets

## Copper Firm, Inactive—Tin Dull—Lead Steady—Zinc Lower

NEW YORK, Aug. 12.

**Copper.**—Thus far this month demand has been very light, but prices are firm. The largest sales have been to foreign countries, the total since Aug. 1 having been about 10,000 gross tons. With domestic consumers pretty well covered far ahead and with some of them probably overbought, sales have been light. Producers are not selling as a rule beyond October, although some favored customers are obtaining a little metal for that position linked up with sales for earlier months. Inquiries continue to appear for November-December metal, with a premium offered for those months, but producers are not inclined to sell that far ahead and, in fact, are not pressing the market.

Statistics for July will be out in a day or two. It is predicted by some that there will be little, if any, increase in stocks of refined metal and probably a decrease in stocks of blister copper.

Electrolytic copper is quoted at 11c., delivered in the Connecticut Valley to the end of October. Copper Exporters, Inc., is selling at 11.30c., c.i.f. usual European ports. Lake copper is in light demand at 11c. to 11.12½c., delivered.

**Tin.**—Virtual stagnation prevails, with no buying from any source. Consumers, who were buying some nearby metal speculatively, are not doing so any more. Sales in London are also very small. Consumers here are well covered ahead and dealers are apparently waiting for lower prices, as it is understood that they recently sold most of their metal to consumers. There are reports that the well-known group in London is now supporting the market, in which prices have been very steady the past week. Stocks in warehouses at London for the week ended Saturday, Aug. 9, were 24,573 tons, an increase of 531 tons over the week previous. This is a very large total and remains large in spite of 200 tons shipped last week to the United States.

There is some mystery as to where the ore for the English refined tin is coming from. Present arrivals do not seem to be sufficient and there is some conjecture that large quantities of ore have been secretly held.

In another dull day the quotation for spot Straits tin here today was 30c., New York. Prices in London

### THE WEEK'S PRICES. CENTS PER POUND FOR EARLY DELIVERY

	Aug. 12	Aug. 11	Aug. 9	Aug. 8	Aug. 7	Aug. 6
Lake copper, New York.....	11.12½	11.12½	11.12½	11.12½	11.12½	11.12½
Electrolytic copper, N. Y.*.....	10.75	10.75	10.75	10.75	10.75	10.75
Straits tin, spot, N. Y. ....	30.00	30.12½	...	30.20	30.20	30.10
Zinc, East St. Louis.....	4.32½	4.32½	4.35	4.35	4.37½	4.42½
Zinc, New York.....	4.67½	4.67½	4.70	4.70	4.72½	4.77½
Lead, East St. Louis.....	5.35	5.35	5.35	5.35	5.35	5.35
Lead, New York.....	5.50	5.50	5.50	5.50	5.50	5.50

\*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

today were close to the levels of the past two weeks, with spot standard quoted at £135 15s., future standard at £137 10s., and spot Straits at £137 2s. 6d. The Singapore price today was £139 5s.

**Lead.**—Following heavy sales to large consumers in the past two or three weeks, demand is now confined to carloads and lots up to 100 tons to small consumers. Nothing is being sold beyond September, although there are numerous inquiries for October metal. This is due to the probability of an advance rather than a decline in price because the present London price figures back to 5.80c., New York, or 30 points above the present New York quotation of 5.50c. Sales in the St. Louis district are at 5.35c.

**Zinc.**—Lack of demand is the prin-

cipal cause of further weakness in prime Western zinc. It was sold yesterday and today as low as 4.30c., East St. Louis. Some producers are willing to part with sufficient metal to meet the light demand, and quotations vary from 4.30c. to 4.35c., East St. Louis, depending on the seller. The New York price range is 4.65c. to 4.70c.

Despite the drop in the metal, the quotation for ore at Joplin is unchanged at \$32. Stocks are in strong hands, with sales last week at 8240 tons. With shipments at 7455 tons and output at 8000 tons last week, the estimated surplus is 31,458 tons.

**Antimony.**—Demand is not insistent, and the market is easier, with Chinese metal quoted at 7.75c., New York, duty paid, for all positions.

**Nickel.**—Wholesale lots of ingot

### New York, Chicago or Cleveland Warehouse

#### Delivered Prices, Base per Lb.

High brass .....	17.75c.
Copper, hot rolled, base sizes.....	20.75c.
Copper, cold rolled, 14 oz. and heavier, base sizes.....	23.00c.
<b>Seamless Tubes—</b>	
Brass .....	22.75c.
Copper .....	23.00c.
Brass Rods .....	16.12½c.
Brazed Brass Tubes.....	25.37½c.

### New York Warehouse

#### Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks .....	9.75c. to 10.25c.
Zinc sheets, open.....	10.75c. to 11.25c.

### Metals from New York Warehouse

#### Delivered Prices, per Lb.

Tin, Straits pig.....	32.50c. to 33.50c.
Tin, bar .....	34.50c. to 35.50c.
Copper, Lake .....	12.75c.
Copper, electrolytic .....	12.50c.
Copper, casting .....	12.25c.
Zinc, slab .....	6.25c. to 7.25c.
Lead, American pig.....	6.50c. to 7.00c.
Lead, bar .....	8.50c. to 9.00c.
Antimony, Asiatic .....	10.00c. to 10.50c.
Aluminum No. 1 ingots for remelting (guaranteed over 99% pure)...	24.00c. to 25.00c.
Alum. ingots, No. 12 alloys .....	23.00c. to 24.00c.
Babbitt metal, commercial grade .....	25.00c. to 35.00c.
Solder, ½ and ½.....	22.50c. to 23.50c.

### Metals from Cleveland Warehouse

#### Delivered Prices, per Lb.

Tin, Straits pig.....	35.00c.
Tin, bar .....	37.00c.
Copper, Lake .....	12.25c.
Copper, electrolytic .....	12.25c.
Copper, casting .....	11.75c.
Zinc, slab .....	5.75c. to 6.00c.
Lead, American pig.....	6.25c. to 6.50c.
Lead, bar .....	8.75c.
Antimony, Asiatic .....	12.50c.
Babbitt metal, medium grade.....	17.50c.
Babbitt metal, high grade.....	38.00c.
Solder, ½ and ½.....	21.75c.

### Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged consumers after the metal has been properly prepared for their uses. (Prices quoted are nominal. Holders of metal are generally unwilling to part with stock at present low levels.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	9.00c.	10.00c.
Copper, hvy. and wire	8.75c.	9.75c.
Copper, light and bottoms .....	7.50c.	8.50c.
Brass, heavy.....	5.00c.	6.25c.
Brass, light.....	4.50c.	5.75c.
Hvy. machine composition .....	7.75c.	8.75c.
No. 1 yel. brass turnings .....	5.50c.	6.50c.
No. 1 red brass or compos. turnings...	7.00c.	8.00c.
Lead, heavy .....	4.25c.	4.75c.
Lead, tea.....	3.00c.	3.50c.
Zinc .....	2.25c.	2.75c.
Sheet aluminum.....	7.50c.	9.50c.
Cast aluminum.....	7.00c.	9.00c.

nickel are quoted at 35c. a lb., with shot nickel at 36c. and electrolytic nickel in cathodes at 35c.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is unchanged at the published price of 22.90c. a lb., delivered.

#### Non-Ferrous Metals at Chicago

CHICAGO, Aug. 12.—Orders for the major metals are more numerous and on the whole this market has more than held the gains made last week. Prices for copper remain steady. The old metal market is moderately active. *Prices per lb., in carload lots:* Lake copper, 11.125c. to 11.25c.; tin, 30.80c.; lead, 5.45c.; zinc, 4.45c.; in less-than-carload lots, antimony, 8.125c. On old metals we quote copper wire, crucible shapes and copper clips, 9c.; copper bottoms, 7.25c. to 7.75c.; red brass, 7.25c. to 7.75c.; yellow brass, 5c. to 5.50c.; lead pipe, 4c.; zinc, 1.50c. to 1.75c.; pewter, No. 1, 15c.; tin-foil, 17.50c.; block tin, 22.50c.; aluminum, 7c. to 7.50c.; all being dealers' prices for less-than-carload lots.

American Locomotive Co. reports profits of \$2,194,534 for the first six months of 1930. After provision for preferred stock dividends the amount applicable to common stock was \$110 a share on the 770,000 shares outstanding. In the first six months of 1929 the company earned \$2.24 a share on its common stock. The company reports that the entire locomotive industry of the country received orders from the railroads for only 256 new locomotives during the first half of 1930, compared with orders for 536 in the first half of 1929.

Pittsburgh Steel Co. had net profit of \$341,007 in the quarter ended June 30, which, after payment of 7 per cent preferred dividend requirements, left 62c. a share on 253,500 shares of common stock. For the fiscal year ended June 30 the company had net profit of \$1,683,149 after all charges equal to \$3.74 a share on the common, comparing with \$4,535,437, or \$15 a share, in the previous fiscal year.

## Reinforcing Steel

### Week Has Been Quiet—Awards Total 3400 Tons

LETTINGS of reinforcing steel the past week were in small volume, amounting only to 3400 tons, of which 1000 tons is for an industrial plant at Decatur, Ill., and 1000 tons for road work in Illinois. New inquiries, at 1400 tons, compare with 2500 tons a week ago. Awards follow:

JERSEY CITY, N. J., 400 tons, route 6, section I and 2 of New Jersey State highway, to Concrete Steel Co.  
MIDDLETOWN, N. Y., 330 tons, New York State highway work, to Concrete Steel Co.  
CHESTER, PA., 100 tons, bridge at Fourth Street, to Taylor-Davis, Inc.  
SPRINGFIELD, ILL., 1000 tons, road work to Calumet Steel Co.  
DECATUR, ILL., 1000 tons, A. E. Staley Mfg. Co., to an unnamed bidder; this tonnage is in addition to one reported last week.  
CHICAGO, 250 tons, Borden Farm Products Co., to Concrete Engineering Co.  
ST. LOUIS, 175 tons, Nurses' Home for St. Mary's Hospital, to Missouri Rolling Mills Corporation.  
REDWOOD CITY, CAL., 100 tons, hospital addition, to Concrete Engineering Co.  
SACRAMENTO, 100 tons, highway work in San Luis Obispo County, to an unnamed bidder.

#### Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

SPRINGFIELD, ILL., 500 tons, State road work.  
NIAGARA FALLS, N. Y., 172 tons, new junior high school; William Walker Construction Co. low bidder.  
BRECKSVILLE, OHIO, 700 tons, highway bridge; Highway Construction Co., general contractor.

## Railroad Equipment

Elgin, Joliet & Eastern has ordered construction of 300 flat cars and 250 gondola cars in its own shops.

Western Fruit Express has bought 100 steel underframes from Siems-Stembel Co.

Illinois Steel Co. has ordered four locomotives of the 0-4-0 type from American Locomotive Co.

Lehigh Valley has ordered one 4-8-4 type locomotive from American Locomotive Co.

St. Louis-San Francisco has ordered 10

car sets of underframe and superstructure parts from American Car & Foundry Co.

Boston & Maine has ordered four de luxe coaches and two de luxe combination passenger and baggage cars from Osgood Bradley Car Co.

Chicago Great Western may revive an inquiry for 15 locomotives.

Chicago & Illinois Midland is considering purchase of seven locomotives.

## Construction Conference to Be Formed

To bring the construction industry and allied agencies to focus upon common problems the creation of a permanent National Conference on Construction was decided upon at an informal meeting held in Chicago under the chairmanship of Julius H. Barnes, chairman of the National Business Survey Conference. The conference was attended by Benjamin Affleck, Portland Cement Association, Chicago, Fenton B. Turck, chairman, National Building Survey Conference, New York, and W. M. Wood, former president, American Institute of Steel Construction, Decatur, Ill.

## Non-Ferrous Ingot Prices

CHICAGO, Aug. 11.—The Non-Ferrous Ingot Metal Institute reports the average prices per pound received by its membership on commercial grades of the six principal mixtures of ingot brass during the 28-day period ended July 18. As there are, as yet, no generally accepted specifications for ingot brass, it must be understood that each item listed below is a compilation representing numerous sales of metal known to the trade by the designation shown but each item, in reality, including many variations in formulas. Until the program of standardizing the principal specifications, now progressing in cooperation with the American Society for Testing Materials, is completed, the following specifications will be understood to refer to "commercial grades."

	Cents
Commercial 80-10-10 (1 per cent impurities) .....	12.285
Commercial 78 per cent metal .....	10.619
Commercial 81 per cent metal .....	10.733
Commercial 83 per cent metal .....	11.105
Commercial 85-5-5-5 .....	11.291
Commercial No. 1 yellow brass ingot .....	8.866

Youngstown Sheet & Tube Co., in the quarter ended June 30, had net income after all charges of \$2,810,345, equivalent to \$2.17 a share on the 1,200,000 shares of no par common stock. This compares with \$2,516,706, or \$1.92 a share, in the preceding quarter, and with \$6,107,057, or \$5.90 a share, in the June quarter last year. Net income for the first six months of 1930 amounted to \$5,327,051, or \$4.09 a share, compared with \$10,537,373, or \$10.12 a share, on the common stock in the first half of last year.

## Shipments of Fabricated Sheet-Metal Ware

	June, 1930	May, 1930	June, 1929
<b>Enameled:</b>			
Dozens shipped .....	247,861(a)	290,617	337,375
Do., six months .....	1,862,342(a)		2,421,710
Value .....	\$996,270	\$1,085,019	\$1,210,568
Do., six months .....	7,005,844		8,260,725
<b>Galvanized:</b>			
Dozens shipped .....	116,096(b)	150,979	140,096
Do., six months .....	950,950(c)		1,234,396
Value .....	\$503,304	\$666,694	\$609,487
Do., six months .....	3,777,139		4,740,822

From United States Department of Commerce.

(a) Smallest total since the information has been available (beginning of 1927).

(b) Lower than any previous total since December, 1927.

(c) Smallest total since the information has been available (beginning of 1926).



# Fabricated Structural Steel

## Awards of 45,500 Tons Include 12,000-Ton Bridge at Cleveland—New Projects Total 60,000 Tons

FABRICATED steel awards of about 45,500 tons were the largest since the middle of July and brought the weekly average for the year to 33,000 tons. Included were 12,000 tons in the Central Lorain bridge at Cleveland, 4600 tons in approaches to the Hudson River Bridge, New York, 5000 tons for a technical high school in Chicago and 2500 tons in a factory and storage tanks at Long Beach, Cal., for the Procter & Gamble Co.

New projects in excess of 60,000 tons were the largest since the last week of June and brought the weekly average of new business for this year to 33,000 tons. Much of the new business was in highway bridges totaling 20,000 tons being inquired for by the State Highway Department of Kentucky. Other large inquiries included 3800 tons for a grade crossing elimination in Detroit, 4000 tons for two bridges in Maine, 6500 tons for a subway in St. Louis, 5000 tons for an office building on Madison Avenue, New York, and 1600 tons in a bridge for Lincoln Park, Chicago. Awards follow:

### North Atlantic States

DEERFIELD, MASS., 250 tons, building for Deerfield Academy, to Berlin Construction Co.  
NEW YORK, 4300 tons, ramp and approaches to Hudson River Bridge, to McClintic-Marshall Co.  
NEW YORK, 4000 tons, office building at Third Avenue and Forty-fourth Street, to Taylor-Fichter Steel Construction Co.  
NEW YORK CENTRAL RAILROAD, 275 tons, bridge, to American Bridge Co.  
NEWARK, N. J., 2000 tons, building for New Jersey Bell Telephone Co., to American Bridge Co.  
BUFFALO, 100 tons, Elk Street Market, to Buffalo Structural Steel Co.  
CHESTER, PA., 315 tons, building for Chester Times, to Bethlehem Fabricators, Inc.  
BALTIMORE, 550 tons, garage for United States Post Office, to Dietrich Brothers.

### The South

ATLANTA, GA., 175 tons, office building, to Ingalls Iron Works Co.  
AMARILLO, TEX., 115 tons, for Texas Corporation, to Orange Car & Steel Co.  
DALLAS, TEX., 1327 tons, Petroleum Tower building, to Mosher Steel & Machinery Co.

### Central States

CHICAGO, 350 tons, theater, to Midland Structural Steel Co.  
CHICAGO, 300 tons, platform extensions for elevated system, to an unnamed bidder.  
CHICAGO, 5000 tons, Lane Technical High School, to Reuter Brothers.  
CHICAGO, 1500 tons, Kilmer School, to A. E. Anderson Iron Works, local.  
BATTLE CREEK, MICH., 1500 tons, Central National Bank, to Whitehead & Kales.  
STILLWATER, MINN., 1000 tons, highway bridge, to American Bridge Co.  
KENOSHA, WIS., 700 tons, viaduct for Chicago & Northwestern, to American Bridge Co.  
CHICAGO, BURLINGTON & QUINCY, 300 tons, bridge repairs, to Vierling Steel Works.  
SPRINGFIELD, ILL., 400 tons, State highway bridges, to Clinton Bridge Co.  
CLEVELAND, 12,000 tons, Central Lorain bridge, to Mount Vernon Bridge Co.  
DETROIT, 869 tons, municipal water tank and tower, to Chicago Bridge & Iron Co.  
DETROIT, 1779 tons, tanks for Fuel Oil

Corporation, to Chicago Bridge & Iron Co.  
CLEVELAND, 140 tons, Old Ladies Home, to Kilroy Structural Steel Co.

### Western States

FAITH, S. DAK., 675 tons, highway bridge, to Pittsburgh-Des Moines Steel Co.  
LOS ANGELES, 800 tons, plates, boilers for a steam power plant for city, to Consolidated Steel Corporation.  
SANTA ANA, CAL., 150 tons, Masonic Temple, to Minneapolis-Moline Power Implement Co.  
LONG BEACH, CAL., 1600 tons, factory for Procter & Gamble Co., to Consolidated Steel Corporation.  
LONG BEACH, 600 tons, addition to Ford plant, to Consolidated Steel Corporation.  
LONG BEACH, 905 tons, storage tanks for Procter & Gamble Co., to Western Pipe & Steel Co.

### South America

BUENOS AIRES, ARGENTINA, 1100 tons, extension to subway, to United States Steel Products Co.

### STRUCTURAL PROJECTS PENDING

Inquiries for fabricated steel work include the following:

### North Atlantic States

NEW YORK, 5000 tons, office building at 444 Madison Avenue for Gresham Realty Co.  
NEW YORK, unstated tonnage, reconstruction of bridge at Croton Lake, N. Y., for Department of Water Supply, Gas and Electricity.  
AUBURN, N. Y., 100 tons, new building for Mercy Hospital.  
NIAGARA FALLS, N. Y., 450 tons, new junior high school; William Walker Construction Co., low bidder.  
PHILADELPHIA, 1000 tons, Bell Telephone Co. building.  
BALTIMORE, 800 tons, hospital building.  
BOSTON & MAINE RAILROAD, 2000 tons, bridge across Charles River.  
BUXPORT, ME., 2000 tons, State highway bridge.

### The South

PENNSYLVANIA RAILROAD, 700 tons, bridges at Weirton, W. Va.; Fort Pitt Bridge Co., low bidder.  
WHEELING, W. VA., 2000 tons, highway bridge.

STATE OF KENTUCKY, 20,000 tons, highway bridges in various parts of State.

### Central States

TEXAS-CHICAGO PIPE LINE, 750 tons, pump houses.  
CHICAGO, 800 tons, Illinois Central Randolph Street station.  
CHICAGO, 1600 tons, bridge in Lincoln Park.  
CHICAGO, 3500 tons, bridge for unnamed owner.  
ST. LOUIS, 6500 tons, St. Louis Electric Railway subway.  
LAWSON, MO., 500 tons, bridge for Rock Island Railroad.  
EVANSTON, ILL., 700 tons, track elevation for Milwaukee Road.  
VALPARAISO, IND., 300 tons, gymnasium for Valparaiso University.  
WILMETTE, ILL., 200 tons, Bahai Temple.  
STEUBENVILLE, OHIO, 130 tons, pit furnace building for Wheeling Steel Corporation.  
COLUMBUS, OHIO, 4000 tons, Ohio State office building.  
WILLOUGHBY, OHIO, 200 tons, plant addition for Ohio Rubber Co.  
CLEVELAND, 1500 tons, two junior high schools.  
DETROIT, 3800 tons, grade crossing elimination over Michigan Central tracks; bids taken by Wayne County Commissioners.  
PERE MARQUETTE RAILROAD, 250 tons, ferry slip at Detroit.

### Western States

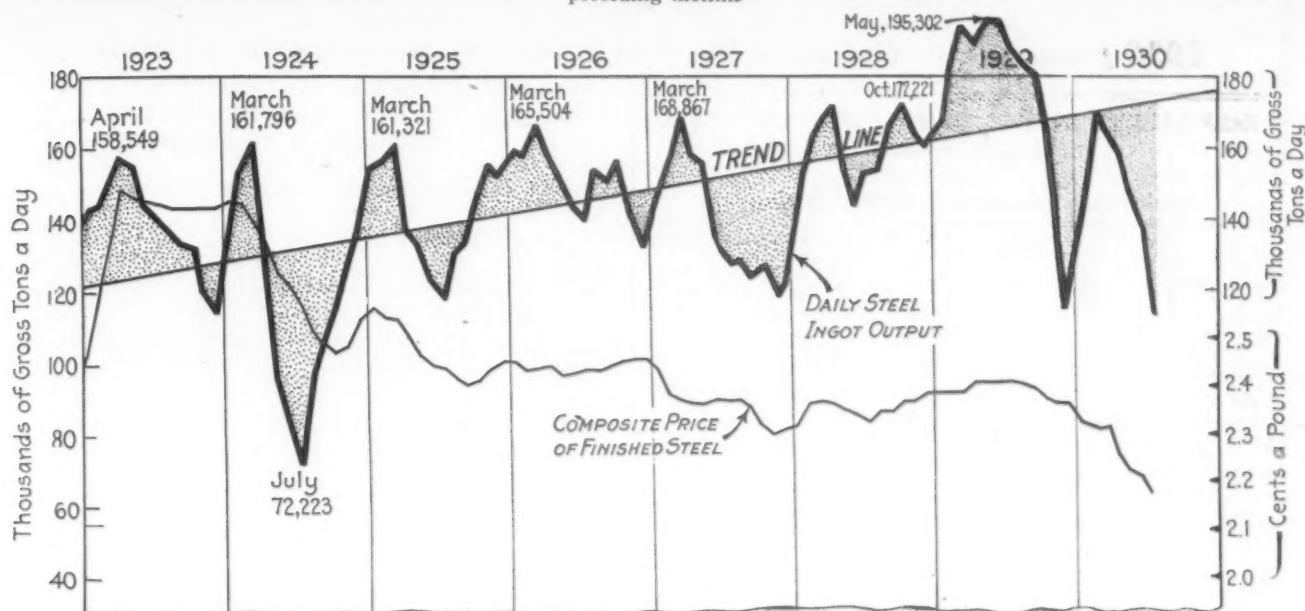
SAN FRANCISCO, 1500 tons, plates and shapes, steamer for Red D line; General Engineering Co. low bidder.

## Reaffirm Scrap Code of Business Practices

The resolutions condemning unfair trade practices contained in the Code of Business Practices for the Scrap Iron Industry, were reaffirmed and approved by the Federal Trade Commission, it was announced by Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel. The resolutions of the Code of Business Practices of the Scrap Iron Industry, which were reaffirmed by the commission, covering the following subjects: "Top-dressing of cars, defamation of competitor, inducing breach of contract, commercial bribery, fictitious bills of lading, misleading price quotations, failure to give credit for overweights, failure to fulfill contracts, overbilling of shipments, arbitration, and cost accounting." Industries which have had material changes made in their codes will have until Oct. 25, 1930, to file briefs with the Federal Trade Commission, objecting to any changes in the codes.

Michigan Steel Corporation has completed the installation of a new steam plant at its plant at Ecorse, Mich., which is being enlarged to provide for a considerable increase in production. The new steam plant has automatic stokers and is of the latest type and design.

Ingot Output in July Dropped the Curve Below All Records Since 1924. Prices in July continued the sharp drop of the three preceding months



## Ingot Production in Summer Slump

Daily Output in July 18 Per Cent Below June and Lowest Since 1924—  
Total for Seven Months Was Sixth Highest Ever Reached

**P**RODUCTION of open-hearth and Bessemer steel ingots in the United States in July is calculated by the American Iron and Steel Institute at 2,933,399 gross tons, compared with 3,440,239 tons in June. The total is the lowest since last De-

cember, exceeding that figure by about 1 per cent. The drop from June represents 14.8 per cent.

On the daily basis, with 26 working days, July showed 112,823 tons, compared with 137,610 tons in June. The July average was the lowest for

any month since September, 1924, when 108,755 tons was registered. It is the lowest July since that of 1924, when the low figure of 72,223 tons was obtained.

This daily average broke below that for December, at 116,120 tons, representing a shrinkage of about one-third since the intervening peak of 169,930 tons last February. Each month since February has shown a drop, and that of July is the sharpest.

### Sixth Largest Seven-Month Total

For the first seven months of 1930 production was 26,726,598 gross tons. This shows a recession of 21.1 per cent from the 33,886,857 tons in the record-breaking period in 1929. Except for that year, however, 1930 does not make such a bad showing, being only 7 per cent below 1928, a little more than 1 per cent below 1927, less than 4 per cent below 1926 and about ½ per cent below 1923. It is in excess of the first seven months of any year except the five named. The total for the seven months was at an average daily rate equivalent to 45,900,000 tons a year.

Electric and crucible ingots, as for several years, are not included in the totals. They have not been included since 1926. In consequence of this it is probable that the total steel output for the first seven months of this year was greater than that for 1923, rather than less. Production of electric and crucible ingots in 1929 averaged about 1725 tons to the working day, or approximately 1 per cent of the year's total output.

PRODUCTION OF OPEN-HEARTH AND BESSEMER STEEL INGOTS  
(Gross Tons)

	Reported by Companies Which Made 94.27 Per Cent of the 1929 Ingots		Calculated Output of All Companies		No. of Working Days
	Open- Hearth	Bessemer	Monthly*	Daily*	
Total, 1928.....	40,538,657	6,591,217	49,865,185	160,338	311
1929					
January .....	3,692,062	549,616	4,500,131	166,672	27
February .....	3,590,826	489,279	4,328,713	180,363	24
March .....	4,180,408	596,691	5,068,176	194,930	26
April .....	4,025,409	640,351	4,950,053	190,387	26
May .....	4,275,161	707,484	5,286,246	195,787	27
June .....	3,999,363	622,004	4,902,955	196,118	25
6 months.....	23,763,229	3,605,425	29,036,274	187,331	155
July .....	3,922,053	649,950	4,850,583	186,561	26
7 months.....	27,683,282	4,255,375	33,886,857	187,220	181
August .....	3,987,400	668,023	4,939,086	182,929	27
September .....	3,624,954	642,886	4,527,887	181,115	25
October .....	3,631,674	642,235	4,534,326	167,939	27
November .....	2,796,214	522,672	3,521,111	135,427	26
December .....	2,375,797	360,489	2,903,012	116,120	25
Total, 1929.....	44,101,321	7,091,680	54,312,279	174,639	311
1930					
January .....	3,137,002	441,572	3,796,090	140,596	27
February .....	3,336,021	508,618	4,078,327	169,930	24
March .....	3,513,904	539,616	4,299,905	165,381	26
April .....	3,406,610	509,234	4,153,860	159,764	26
May .....	3,265,190	528,968	4,024,778	149,066	27
June .....	2,835,527	407,586	3,440,239	137,610	25
6 months.....	19,494,254	2,935,594	23,793,199	153,505	155
July .....	2,411,592	353,723	2,933,399	112,823	26
7 months.....	21,905,846	3,289,317	26,726,598	147,661	181

\*Revised figures given for 1929.



# 1930 January-June Output of Pig Iron (Compiled by American Iron and Steel Institute)

## HALF-YEARLY OUTPUT OF PIG IRON AND FERRO-ALLOYS BY STATES.

### HALF-YEARLY PRODUCTION OF PIG IRON BY STATES.\*

States.	Blast furnaces. (a)				Production of pig iron not including ferro-alloys—Gross tons.		
	In blast Dec. 31, 1929.	June 30, 1930.			First half of 1929.	Second half of 1929.	First half of 1930.
		In	Out	Total			
Massachusetts.....	1	1	0	1			
New York.....	10	12	8	20	1,444,109	1,360,589	1,238,331
New Jersey.....	0	0	2	2			
Pennsylvania.....	47	47	49	96	7,200,722	6,815,293	5,722,782
Maryland.....	4	4	2	6			
Virginia.....	1	1	8	9			
West Virginia.....	3	3	0	3			
Kentucky.....	2	1	1	2	1,039,524	1,065,452	1,013,259
Mississippi.....	0	0	1	1			
Tennessee.....	2	0	5	5			
Alabama.....	15	14	11	25	1,411,933	1,292,800	1,412,132
Ohio.....	30	34	22	56	4,972,419	4,729,586	3,928,199
Illinois.....	16	15	10	25	2,265,105	2,092,800	1,957,738
Indiana.....	11	11	7	18	2,582,253	2,503,362	2,322,926
Michigan.....	7	7	3	10			
Wisconsin.....	0	0	2	2			
Minnesota.....	2	2	1	3			
Missouri.....	0	0	2	2	488,589	492,679	459,981
Colorado.....	3	2	3	5			
Utah.....	1	1	0	1			
Total.....	155	155	137	292	21,404,654	20,352,561	18,055,348

(a) Completed and rebuilding pig iron furnaces.

### HALF-YEARLY PRODUCTION OF COKE PIG IRON BY STATES.\*

States.	In blast Dec. 31, 1929.	In	Out	Total	First half of 1929.	Second half of 1929.	First half of 1930.
Massachusetts.....	1	1	0	1			
New York.....	10	12	8	20	1,444,109	1,360,589	1,238,331
New Jersey.....	0	0	2	2			
Pennsylvania.....	47	47	49	96	7,200,722	6,815,293	5,722,782
Maryland.....	4	4	2	6			
Virginia.....	1	1	8	9			
West Virginia.....	3	3	0	3	1,028,248	1,052,405	1,004,686
Kentucky.....	2	1	1	2			
Tennessee.....	1	0	4	4			
Alabama.....	15	14	11	25	1,411,933	1,292,800	1,412,132
Ohio.....	30	34	22	56	4,972,419	4,729,586	3,928,199
Illinois.....	16	15	10	25	2,265,105	2,092,800	1,957,738
Indiana.....	11	11	7	18	2,526,025	2,445,720	2,279,267
Michigan.....	3	4	0	4			
Wisconsin.....	0	0	2	2			
Minnesota.....	2	2	1	3			
Missouri.....	0	0	2	2	488,589	492,679	459,981
Colorado.....	3	2	3	5			
Utah.....	1	1	0	1			
Total.....	150	152	132	284	21,337,150	20,281,872	18,003,116

### HALF-YEARLY PRODUCTION OF CHARCOAL PIG IRON BY STATES.\*

States.	In blast Dec. 31, 1929.	In	Out	Total	First half of 1929.	Second half of 1929.	First half of 1930.
Tennessee.....	1	0	1	1			
Mississippi.....	0	0	1	1	67,504	70,689	52,232
Michigan.....	4	3	3	6			
Total.....	5	3	5	8	67,504	70,689	52,232

### HALF-YEARLY PRODUCTION OF ALL KINDS OF FERRO-ALLOYS BY STATES.†

States.	In blast Dec. 31, 1929.	In	Out	Total	First half of 1929.	Second half of 1929.	First half of 1930.
New York.....	1	0	1	1	112,999	107,585	110,622
New Jersey.....	0	0	0	0			
Pennsylvania.....	6	6	5	11	215,709	221,527	197,733
Virginia.....	1	0	1	1			
West Virginia.....	0	0	0	0			
Tennessee.....	0	1	1	2	37,455	31,875	28,658
Alabama.....	0	0	0	0			
Ohio.....	2	2	1	3			
Illinois.....	0	0	0	0	49,243	80,375	78,291
Iowa.....	0	0	0	0			
Total.....	10	9	9	18	415,406	441,362	415,304

### HALF-YEARLY PRODUCTION OF PIG IRON AND FERRO-ALLOYS ACCORDING TO FUEL USED.

	150	152	132	284	21,337,150	20,281,872	18,003,116
Coke pig iron.....	5	3	5	8	67,504	70,689	52,232
Charcoal pig iron.....							
Total pig iron.....	155	155	137	292	21,404,654	20,352,561	18,055,348
Total ferro-alloys.....	10	9	9	18	415,406	441,362	415,304
Grand total.....	165	164	146	310	21,820,060	20,793,923	18,470,652

\* Does not include the production of ferro-manganese, spiegeleisen, ferro-silicon, or other ferro-alloys.

† Includes ferro-manganese, spiegeleisen, ferro-silicon, and other ferro-alloys made in blast furnaces or in electric furnaces.

‡ During the first half of 1930 there were 13 blast furnaces which made ferro-alloys only or ferro-alloys and pig iron.

|| Blast furnaces only; electric furnaces not included.

## HALF-YEARLY OUTPUT OF PIG IRON BY GRADES AND FERRO-ALLOYS BY KINDS.

### HALF-YEARLY PRODUCTION OF BASIC PIG IRON.

States.	First half of 1929.	Second half of 1929.	First half of 1930.
Massachusetts, New York.....	684,597	614,091	522,013
Pennsylvania—Allegheny County.....	2,183,721	2,115,100	1,817,825
Other countries.....	2,562,927	2,324,497	1,947,841
Maryland, West Va., Kentucky, Ala.....	1,402,065	1,298,538	1,382,446
Ohio.....	2,636,063	2,304,212	1,974,129
Indiana, Illinois.....	3,015,263	2,772,916	2,683,594
Michigan, Minnesota, Colorado, Utah.....	500,228	497,436	506,901
Total.....Gross tons.	12,984,864	11,926,790	10,834,749

### HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

States.	First half of 1929.	Second half of 1929.	First half of 1930.
Pennsylvania.....	2,032,404	1,924,175	1,635,067
New York, Md., W. Va., Tenn., Ala.....	482,965	514,219	421,139
Ohio.....	1,536,162	1,552,296	1,349,565
Indiana, Illinois.....	892,926	942,093	777,009
Total.....Gross tons.	4,944,457	4,932,783	4,182,780
Including low-phosphorus pig iron.....	115,146	154,082	116,716

### HALF-YEARLY PRODUCTION OF FOUNDRY PIG IRON.

States.	First half of 1929.	Second half of 1929.	First half of 1930.
Massachusetts, New York.....	297,112	543,486	434,005
Pennsylvania.....	304,907	322,753	244,894
Virginia, Tennessee, Alabama.....	714,231	679,529	708,734
Ohio.....	333,555	370,489	254,213
Illinois.....	234,078	146,412	137,265
Michigan.....	164,111	214,834	128,096
Indiana, Minnesota, Colorado, Utah.....	63,176	57,338	60,811
Total.....Gross tons.	2,111,170	2,334,841	1,968,018

### HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON.

States.	First half of 1929.	Second half of 1929.	First half of 1930.
Massachusetts, New York.....	305,160	52,768	162,327
Pennsylvania.....	55,117	73,152	53,852
Ohio.....	454,048	463,682	331,895
Kentucky, Ind., Illinois, Michigan, Minn.....	459,975	448,911	433,736
Total.....Gross tons.	1,274,300	1,038,513	981,810

### HALF-YEARLY PRODUCTION OF FORGE PIG IRON.

States.	First half of 1929.	Second half of 1929.	First half of 1930.
Pennsylvania.....	59,369	53,788	21,434
Alabama, Ohio.....	10,802	43,971	17,979
Total.....Gross tons.	70,171	97,759	39,413

### HALF-YEARLY PRODUCTION OF MISCELLANEOUS GRADES OF PIG IRON AND DIRECT CASTINGS.

States.	First half of 1929.	Second half of 1929.	First half of 1930.
New York, Pennsylvania.....	2,432	2,046	2,036
Maryland, Alabama.....	878	1,446	24,416
Ohio.....	8,069	7,629	6,410
Indiana, Illinois, Michigan, Minn.....	8,313	10,754	15,716
Total.....Gross tons.	19,692	21,875	48,578

### HALF-YEARLY PRODUCTION OF FERRO-ALLOYS BY KINDS.

	First half of 1929.	Second half of 1929.	First half of 1930.
Ferro-manganese and spiegeleisen.....	232,769	243,886	226,655
Ferro-silicon.....	160,786	180,436	170,366
Ferro-phos. and all other ferro-alloys.....	21,851	17,040	18,283
Total.....Gross tons.	415,406	441,362	415,304

### PIG IRON AND FERRO-ALLOYS MADE FOR SALE OR FOR USE OF MAKERS IN THE FIRST SIX MONTHS OF 1930.

Pig iron and ferro-alloys.	For sale.	For maker's use.	Total. Gross tons.
Pig iron:			
Basic.....	822,770	10,011,979	10,834,749
Bessemer and low-phosphorus.....	192,839	3,989,941	4,182,780
Foundry.....	1,768,140	199,878	1,968,018
Malleable.....	903,914	77,896	981,810
Forge or mill.....	27,864	11,549	39,413
White and mottled, direct castings, etc.....	26,243	22,335	48,578
Total pig iron.....Gross tons.	3,741,770	14,313,578	18,055,348
Ferro-alloys:			
Ferro-manganese and spiegeleisen.....	98,002	128,653	226,655
Ferro-silicon.....	170,366		170,366
All other ferro-alloys.....	18,233	50	18,283
Total ferro-alloys.....Gross tons.	286,601	128,703	415,304
Total pig iron and ferro-alloys.....Gross tons.	4,028,371	14,442,281	18,470,652

# British Still Seek Protective Tariff

Unemployment Attributed to High Costs and Lack of Protection—  
Steel Mills Resuming, Following Holiday Suspension

(By Cable)

LONDON, ENGLAND, Aug. 11.

**P**ROPAGANDA is increasing for a general protective tariff, with the latest move a report by the executive council, Association of British Chambers of Commerce, stating that the unprotected home market and high production costs are the main causes for unemployment. The report also urges development of Empire resources. The Government Economic Mission to the Far East sails Sept. 19, first visiting China.

## Ruhr Coal Stocks Larger

Ruhr Coal Syndicate pithead stocks reached 6,700,000 metric tons at the end of July, an increase from June of 600,000 tons.

The coal operators of the Ruhr are deciding this week whether to terminate the current wage agreement or not. If notice is given by Aug. 19, the agreement can be ended Sept. 30. Otherwise the expiration date is April, 1931.

Strong opposition to any wage reduction is expected to be offered by the miners.

German motorcycle manufacturers, representing 98 per cent of the industry, have formed a limited company to protect their interests and stabilize prices, at the same time inviting foreign companies which supply the German market to cooperate.

## Germans to Build Turkish Railroad

The Turkish Government and German steel works, including the Vereinigte Stahlwerke, Friedrich Krupp and Henschel interests, have ratified

**Ruhr Coal Stocks Increase 600,000 Tons and Operators May Terminate Wage Agreement.**

\* \* \*

**Barcelona Plant of Ford Motor Co. Closed as Result of New Spanish Tariff.**

\* \* \*

**Italy to Spend \$15,000,000 on Public Improvements to Relieve Unemployment This Winter.**

\* \* \*

**Soviet Union Contracts for Blast Furnace to Make Ferromanganese at Georgian Mines.**

\* \* \*

**Turkey Signs \$12,000,000 Contract With German Interests for Railroad Material.**

an agreement for supplies to be furnished for construction of a new Turkish railroad by Julius Berger involving about 50,000,000 m. (\$11,900,000). Payments are extended over a period of ten years.

Dorman, Long & Co. have been awarded the contract by the Egyptian Government for a new Nile bridge at Cairo, on a low bid of 308,000 Egyptian pounds. The Egyptian Government has also placed a contract for 12,000 tons of rails with Elias Gannage & Fils of Cairo.

The Ford Motor Co. has closed its

Barcelona plant as a result of the new Spanish import duties.

Italy plans to spend £3,000,000 (\$14,598,000) to relieve unemployment this winter by developing public works, including roads, harbors, railroads, well-borings in the Northern and Central Provinces and construction of a new Florence to Bologna railroad.

Italian output in June was 46,000 metric tons of pig iron and 165,000 tons of raw steel. The May output of rolled steel was 163,000 tons.

Luxemburg's output in June was 178,000 metric tons of pig iron and 150,000 tons of raw steel. Polish output in June was 36,000 metric tons of pig iron, 91,000 tons of raw steel and 70,000 tons of rolled steel, the smallest in some years. Saar output in June was 157,000 metric tons of pig iron and 148,000 tons of raw steel.

## British Market Quiet

The British iron and steel situation is unchanged, with holiday influences still affecting demand. Midland pig iron producers have reduced prices 2s. 6d. (61c.) per ton, but Cleveland makers have offered no revision. East Coast hematite in stock totals about 100,000 tons, but includes a moderate tonnage already sold.

Steel is quiet, as works are generally resuming operations this week after the holidays. Mills are badly in need of new orders and specifications against contracts already on their books. Some improvement in export inquiry for heavy material has developed, but business is slow.

British consumers of Continental

British and Continental European Export Prices per gross ton, f.o.b. United Kingdom Ports, Hamburg and Antwerp, with the £ at \$4.8665 (par)

### British Prices f.o.b. United Kingdom Ports

Ferromanganese, export.	£11 10s.		£55.95
Billets, open-hearth....	5 17½	to 6 5s.	28.46 to \$30.41
Black sheets, Japanese specifications .....	12 5		59.61
Tin plate, per base box..	0 18	to 0 18½	4.37 to 4.39
Steel bars, open-hearth...	7 15	to 8 5	1.69 to 1.79
Beams, open-hearth....	7 7½	to 7 17½	1.60 to 1.71
Channels, open-hearth...	7 12½	to 8 12½	1.66 to 1.87
Angles, open-hearth....	7 7½	to 7 17½	1.60 to 1.71
Black sheets, No. 24 gage	9 10	to 9 15	2.06 to 2.12
Galvanized sheets, No. 24 gage .....	11 17½		2.57

### Continental Prices, f.o.b. Antwerp or Hamburg

Foundry iron, 2.50 to 3.00 per cent sil., 1.00 per cent and more phos. ....	£2 16s.	to £3 0s.	\$13.62 to \$14.60
Billets, Thomas.....	4 6	to 4 7	20.93 to 21.17

Wire rods, low C., No. 5 B.W.G. ....	6 2	to 6 4	29.69 to 30.19
Rails, light .....	6 0		29.20
Black sheets, No. 31 gage, Japanese.....	11 5	to 12 12	54.68 to 58.32
Steel bars, merchant....	4 11	to 4 12	1.00 to 1.01
Steel bars, deformed....	4 10	to 4 11	0.99 to 1.00
Beams, Thomas, British standard .....	4 19½	to 5 0½	1.10 to 1.11
Channels, Thomas, American sections .....	5 12	to 5 14	1.24 to 1.26
Angles, Thomas, 4-in. and larger, over ½-in. thick .....	4 9	to 4 10	0.98 to 0.99
Angles, Thomas, 3-in. ...	4 10	to 4 11	0.99 to 1.00
Hoop and strip steel over 6-in. base .....	4 15		1.03
Wire, plain, No. 8 gage..	6 0	to 6 12½	1.32 to 1.46
Wire, barbed, 4-pt. No. 12 B.W.G.....	10 0	to 11 0	2.21 to 2.43
Wire nails, base.....	6 2½	to 6 12½	\$1.35 to \$1.46 a keg



semi-finished steel have bought moderately, but demand has slackened. The semi-finished and beams selling cartel is reported to be operating, but meetings are still being held and considerable confusion prevails here.

Tin plate is quiet, with all works closed last week for the annual holiday and many continuing idle this week and for the next two or three weeks to reduce production to the allotted quota, so as to avoid penalties.

Export inquiry for tin plate is fair, suggesting that good business may develop in the near future. Galvanized sheet demand is negligible and works are badly in need of substantial orders. Black sheets continue quiet.

### Continental Sales Cartel Has Six Offices

DUSSELDORF, GERMANY, Aug. 2.—The new selling syndicate for semi-finished material and beams will have its main office for semi-finished steel at Seraing, Belgium, and the head office for sales of beams in Paris. Branch offices will be opened for the sale of all products in London, Rotterdam, Brussels and here. In certain circles it is doubted that the selling syndicate will be of long duration, as its establishment was based on an agreement that a similar syndicate for the sale of merchant bars should be formed by Dec. 1 of this year. Many obstacles to the establishment of a syndicate for merchant bars must be surmounted, and it is doubted that such a sales organization can be functioning in so short a time.

### More Magnesium Alloy Is Used in German Aircraft

HAMBURG, GERMANY, Aug. 1.—The aircraft industry of Germany is using increasing quantities of magnesium alloy in the construction of the fuselage frames, tanks and the motors of airplanes. According to recent statistics gathered by the industry, only about 10 per cent of the light metals used in 1927 was magnesium alloy, but by 1929 it represented almost 50 per cent of all the light metals. This increased use is partly explained by the fact that the price of magnesium alloy has been reduced twice since 1927.

### Japan's Indian Iron Imports Increasing

YOKOHAMA, JAPAN, July 19.—Imports of Indian pig iron in the first half of this year have exceeded 100,000 tons, despite a general reduction in the demand for pig iron as a result of trade depression. As a result, pig iron producers in Japan have renewed their efforts to have the duty increased considerably.

### British Blacksmiths Turn to Ornamental Iron

LONDON, ENGLAND, Aug. 2.—More than 160 craftsmen in wrought iron have formed an association in Kent, which will endeavor to assist rural crafts. In 1925, the Kent Rural Community Council organized the first British exhibit of wrought iron work by village blacksmiths with a display of their work at the Bath and West Agricultural Show.

Since 1925 a survey has been undertaken to determine the real value to craftsmen of the work begun at that time. Visits have been made to more than 300 craftsmen in their shops, and the conclusion is that, while the blacksmith's general business from agricultural sources has steadily declined even from the low point of 1925, those who have developed ornamental wrought iron work have in general been able to offset the loss of agricultural business. In fact, a substantial number of these craftsmen have definitely increased the scope and profit of their business.

Each year, according to the association, there is an encouraging improvement, not only in the artistic merit of the wrought iron work produced, but in the business methods of the craftsmen. The experience of the past five years suggests that the country will be able to retain the best of its craftsmen if they continue to gain public support for their products.

### Japan to Produce More Ferromanganese

YOKOHAMA, JAPAN, July 19. — As part of the plan of the Government Steel Works at Yawata to furnish all Japanese steel requirements, increased production of ferromanganese is planned. At present the Government works produces only 50 to 60 metric tons of ferromanganese a month, while the imports are large.

### German Export Bounties Prove Inadequate

DUSSELDORF, GERMANY, Aug. 2.—Dissatisfaction is spreading among German manufacturers over the export bounty system. It is pointed out by exporting manufacturers that the amount refunded to them on material which they ship abroad after further fabrication is based on the difference between the domestic market and the officially fixed export prices. There is, however, a wide difference between these officially determined prices and the actual market at which export steel is being sold. In consequence, the export bounty plan, designed to aid the German manufacturer in competing with the manufacturers of other countries, fails, as the foreign consumer buys at much lower prices. This has been particularly evident in the wire rod and steel bar markets. While the official

export price on wire rods is £6 5s. (\$30.41) a ton, f.o.b. port, the actual selling price today is from 7s. (\$1.70) to £1 (\$4.87) a ton less.

### Swiss-American Company to Sell Beryllium

HAMBURG, GERMANY, Aug. 1.—The Beryllium Holding Corporation has been incorporated with headquarters at St. Moritz, Switzerland, with 1,000,000 Swiss francs capital. Controlled by Swiss and American interests, it has taken over the exclusive sales of beryllium produced by the Beryllium Company Granz in Austria. The sales company expects to offer the output of the Austrian company equally in the British and American markets. As German requirements are being satisfactorily met with the production of the Siemens & Halske, A. G., an agreement has been made to limit competition in Germany.

### Soviet Ferromanganese in Prospect

A contract for the construction and equipment of a blast furnace at the Tchiatury manganese ore mines in Georgia has been concluded with the Siemens-Schuckert interests in Germany, by the Supreme Economic Council of Georgia. Russian engineers will study methods of production in various countries and a group of engineers from abroad has been invited to study the manganese ore mines and the problem of ferromanganese production in Georgia.

### Germany Expects Large French Car Orders

HAMBURG, GERMANY, Aug. 1. — Locomotive and car builders expect to book large orders from the French railroads, as the French locomotive and car-building shops are in most cases offering deliveries up to 12 months, being filled with contracts from the French program of expansion and modernization of railroads. In 1929, German shops supplied 48 of a total of 59 locomotives imported by France and a total of 1255 railroad cars. The present requirements of the French railroads, a large part of which German shops expect to furnish, are 30 locomotives and about 2000 cars.

Herberts Machinery Co., Ltd., Los Angeles, Cal., celebrated its fifteenth anniversary by the purchase of a large building at 2915 Santa Fe Avenue, that city, formerly the property of the Keystone Iron & Steel Co. The Herberts company will utilize this building for the display of machine tools. The company represents about 40 machine tool manufacturers in southern California and Arizona.

# Machinery Markets and News of the Works

## Dullness is Unrelieved

Machine Tool Trade Hopeful, However, That Some Improvement May Come Next Month

**A**LTHOUGH the machine tool trade continues to look hopefully toward September as the time when at least a slight improvement in business may become apparent, there are no signs yet of any change from the extreme dullness that has prevailed during the summer.

Sales during the first two weeks of August have not gained over the low record of July, and, in fact, there are indications that the total volume this month may be below that of last month.

Shop forces in some of the machine tool manufacturing plants are being

steadily reduced. It is estimated that in the Cincinnati district the average operation is not above 40 per cent of normal.

With little domestic business on which to quote, machine tool builders continue to consider the requirements of the Amtorg Trading Corporation for shipment to Soviet-Russia. The extensive credit terms now demanded by Amtorg, in most cases a full year with payments each three months, have been accepted by a number of tool builders, although a good many still insist on cash against bills of lading.

## New York

**N**EW YORK, Aug. 14.—In the absence of domestic orders for machine tools, the requirements of the Amtorg Trading Corporation for shipment to Russia still command considerable attention. There has been no improvement either in inquiries or orders from metal-working manufacturers in this district, and not much change is looked for this month, although the trade has expectations that at least slight gains will have become apparent by September.

Officials of International Paper Co., 220 East Forty-second Street, New York, have organized Continental Paper & Bag Corporation to establish a paper bag manufacturing plant at Mobile, Ala. Company will use part of present local mill of parent company at that place. Initial mill installation will cost over \$200,000.

George A. Just Co., 395 Lexington Avenue, New York, operating a structural steel fabricating works at Long Island City, has purchased 15 acres at Bound Brook, N. J., as site for a new plant, to cost over \$100,000. Present works will be removed to new location.

Elevating, conveying and other mechanical-handling equipment, and general operating machinery to cost about \$1,500,000 will be installed in new multi-story printing plant to be erected by New York Telegram, 73 Dey Street, New York, on West Street, 130 x 180 ft. Entire project will cost about \$3,000,000. Howell & Thomas, 3868 Carnegie Avenue, Cleveland, are architects.

Bakelite Corporation, 247 Park Avenue, New York, manufacturer of rubberized insulation products, has awarded general contract to Karno-Smith, Inc., Broad Street Bank Building, Trenton, N. J., for new plant at Bound Brook, N. J., comprising three main manufacturing units, one, two and three stories, 406 x 410 ft., 128 x 223 ft., and 100 x 200 ft., with one-story machine shop, 100 x 100 ft., and wing extension, 35 x 106 ft., for automobile service and repairs; power plant, 50 x 100 ft., and miscellaneous units, entire project to cost over \$1,000,000 with machinery. Francisco & Jacobus, 511 Fifth Avenue, New York, are architects and engineers.

United Dry Docks, Inc., 11 Broadway, New York, is carrying out expansion at plant at Mariners Harbor, Staten Island, to include a new 12,000-ton drydock for handling oil tankers, etc., with additional repair and construction facilities.

Tide Water Oil Corporation, 17 Battery Place, New York, plans rebuilding part of oil storage and distributing plant at Long Island City, destroyed by fire Aug. 8, with loss close to \$50,000 including equipment.

Todd Shipyards Corporation, 25 Broadway, New York, is carrying out expansion and improvements at its different shipbuilding and repair plants, to include installation of equipment for handling larger vessels, as well as Diesel engines and other mechanical units. At its Erie Basin Works, Brooklyn, a one-story machine shop extension is under way, providing about 16,500 sq. ft., of additional floor space. Facilities are being provided at Robins plant, Brooklyn, for repair and

maintenance of Diesel and turbine engines, including rotor work, blading, etc.

A. P. Smith Mfg. Co., 545 North Arlington Avenue, East Orange, N. J., manufacturer of fire hydrants, valves, castings, etc., has plans for a one-story addition. It is understood that the extension will be occupied by Eclipse Aviation Corporation, same address, for aircraft engine production.

Raymond B. Flatt, 600 Bloomfield Avenue, Bloomfield, N. J., architect, has asked bids on general contract for a two-story automobile service, repair and garage building at Maplewood, N. J., to cost over \$100,000 with equipment.

Drumchrome Corporation, care of William L. Finne, 1201 East Grand Street, Elizabeth, N. J., architect, expects to ask bids early in fall for new one and two-story plant at Rahway, N. J., for manufacture of chrome steel tanks and drums, to cost over \$40,000 with equipment. Company is now operating a temporary plant in leased quarters at Perth Amboy, N. J., and will remove to new location, providing additional equipment for larger output.

Public Service Electric & Gas Co., Public Service Terminal, Newark, is considering an addition to equipment storage and distributing plant at Passaic, N. J., to cost over \$150,000 with equipment.

Quigley Furnace Specialties Co., 56 West Forty-fifth Street, New York, has changed its name to Quigley Co., Inc. It recently purchased business and goodwill of Annite Industries, formerly of Washington. Annite is an all-purpose cleansing compound used in many lines of industry.

## New England

**B**OSTON, Aug. 11.—Boston Elevated Railway Co., 31 St. James Avenue, Boston, has asked bids on general contract for an automobile service, repair and garage building for motor buses, to cost over \$150,000 with equipment. Company engineering department is in charge.

Manville Machine Co., East Main Street and Hamilton Avenue, Waterbury, Conn., has awarded general contract to T. J. Smith Co., Waterbury, for one-story addition, 56 x 80 ft., forming second story on present one-story unit.

Torrington Castings Co., Torrington, Conn., is planning to rebuild part of foundry recently destroyed by fire.

United Airport, East Hartford, Conn., which recently secured 500 acres adjoining plant of Pratt & Whitney Aircraft Co. for new airport development, has plans for two main hangar units with repair and reconditioning facilities, reported to cost over \$40,000 with equipment. Austin Co., 120 Broadway, New York, is engineer. Airport company also plans other field structures, utilizing about 165 acres at present time.

Bay State Metal Products Corporation, Boston, care of Olaf M. Johnsen, 91 Edwin Street, recently formed by Mr. Johnsen and associates, plans operation of



local factory for production of line of metal goods, including electrical boxes, etc. Coleman H. Joyce, Boston, will be an official of new company.

Ice Service Co., 702 Pleasant Street, Fall River, Mass., is considering new one-story ice-manufacturing plant to cost about \$55,000 with machinery.

## Philadelphia

**P**HILADELPHIA, Aug. 11.—Susquehanna Collieries Co., Commercial Trust Building, Philadelphia, is contemplating new central coal breaker near Mount Carmel, Pa., for handling output of four mining properties in that district, to cost over \$200,000 with machinery.

Philadelphia Coke Co., 4501 Richmond Street, Philadelphia, has taken out a permit for a new conveyor unit with auxiliary equipment at local plant, to cost about \$18,000.

Sun Oil Co., 1608 Walnut Street, Philadelphia, will carry out expansion at refining plant at Toledo, Ohio, to include construction of new pipe line from refinery to a point on Maumee River; new marine dock for storage and distributing service for tankers will be built on river, to cost over \$400,000 with equipment. Company is also planning construction of pipe line from Marcus Hook, Pa., refinery to Barge Canal harbor terminal at Syracuse, N. Y., to cost more than \$1,000,000. Work has been started on a similar line from Marcus Hook to Pittsburgh, where branch lines will be built to Cleveland and Toledo, to cost more than \$8,000,000 with booster stations and other equipment.

Adelphia Bronze & Aluminum Foundry, Inc., Philadelphia, care of Edwin A. France, 6933 Tulip Street, Tacony, recently formed by Mr. France and associates with capital of 100 shares of stock, is planning operation of local foundry for production of brass, bronze, aluminum and other metal castings. E. Elmer Wallace, 5901 Keystone Street, Wissinoming, will be an official of new company.

Maderia, Hill & Co., Broad and Spruce Streets, Philadelphia, operating coal mining properties, are considering construction of central coal breaker near Frackville, Pa., to handle output of five mining properties in that district, to cost more than \$350,000 with machinery.

Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until Aug. 26 for four motor-driven engine lathes for Philadelphia Navy Yard, also for quantity of steel tubing; and on Aug. 19 for two centrifugal pumps.

Minnesota Mining & Mfg. Co., Forest Street, St. Paul, Minn., manufacturer of abrasive materials, sandpaper, etc., has purchased plant and business of Baeder-Adamson Co., Allegheny Avenue and Richmond Street, Philadelphia, manufacturer of similar products, a subsidiary of American Glue Co., Boston. Purchasing company plans early removal of plant to St. Paul, where production will be increased and consolidated with main works.

E. J. Quigley, State purchasing agent, State House, Trenton, N. J., will receive bids until Aug. 26 for pumps, automobile bodies, etc.

Pennsylvania Power & Light Co., Allentown, Pa., has plans for extensions and improvements in steam-operated power plant at Harrisburg, Pa., to cost about \$40,000 with equipment.

Board of Directors, Hershey Industrial School, Hershey, Pa., has plans to increase facilities for handling about 1000 students, as compared with 300 at present

time, to include new mechanical and trades shops. G. C. Copenhagen is manager.

Hazle Brook Coal Co., Hazle Brook, Luzerne County, Pa., is considering construction of new coal breaker at Girardville, Pa., to replace a unit destroyed by fire several months ago. New breaker will handle output of Girard mines, as well as that from Haven Run coal mines, now served by a smaller plant, and will cost over \$1,000,000 with equipment.

Old Time Petroleum Co., Ninth and Tatnall Streets, Wilmington, Del., is planning new four-story automobile service, repair and garage building, 130 x 178 ft., to cost over \$300,000 with equipment.

Proctor & Schwartz Electric Co., Seventh Street and Tabor Road, Philadelphia, has acquired Liberty Gauge & Instrument Co.

All metal-working and other machinery in new plant of Penn Metal Co., on Oregon Avenue, Philadelphia, has been moved and is being set up for production by the John R. Kammerer Co., industrial engineers, 2641 Christian Street, Philadelphia.

## South Atlantic

**B**ALTIMORE, Aug. 11.—Plans are under way by Fred S. Gichner, 1214 D Street, N. W., Washington, for a one-story ornamental iron works at 1210 Twenty-fourth Street, N. W., to cost close to \$50,000 with equipment.

Post Office Department, Washington, is planning installation of a service, repair and garage department in new post office station at Baltimore, entire project to cost about \$200,000. Bids are being asked by purchasing agent for department until Aug. 18 for one air compressor.

Reynolds Metals Co., Louisville, is planning extensions and improvements in recently established branch plant at Richmond, Va., for production of tin foils, etc. Company has work nearing completion on a new testing and control laboratory unit at plant.

United States Cold Storage Co., 2001 West Pershing Road, Chicago, will award general contracts soon for new multi-story ice-manufacturing and cold storage plant at Atlanta, Ga., to cost over \$1,500,000 with machinery. A. Epstein, address noted, is architect and engineer.

Southern Steel Stampings, Inc., Winston-Salem, N. C., care of L. W. Lawrence, 1149 West Fourth Street, recently formed by Mr. Lawrence and associates with capital of \$100,000, is planning operation of local mill for production of steel stampings and other stamped metal goods.

Botecourt Packing Association, Salem, Va., plans installation of conveying equipment, grading and sizing machinery in new fruit packing plant, for which foundations will be laid at once, entire project to cost over \$100,000 with machinery. Organization is an interest of Producers and Growers Exchange, Salem.

H. J. Heinz Co., 1062 Progress Street, Pittsburgh, food packer, will soon begin superstructure for new branch canning plant at Winchester, Va., to cost over \$80,000 with equipment. General contract was recently let to George F. Hazelwood, Cumberland, Md.

Chemical & Pigments Co., St. Helena, Baltimore, has awarded general contract to Price Construction Co., Maryland Trust Building, for two one-story plant units, 50 x 115 ft., and 50 x 108 ft., to cost over \$50,000 with equipment.

Standard Oil Co., Durham, N. C., and

746 Marietta Street, N. W., Atlanta, Ga., is considering new storage and distributing plant at Durham, with initial capacity of 225,000 gal., to cost about \$65,000 with equipment.

Woodcraft Novelty Co., Inc., Boone, N. C., is planning installation of an electric generator set, with capacity of 50 kw., and auxiliary equipment, for plant operation.

Smith-Douglass Co., Inc., Board of Trade Building, Norfolk, Va., is contemplating a new one-story plant for manufacture of commercial fertilizer, to cost about \$60,000 with machinery.

Crystal Ice Corporation, 1050 Ponce de Leon Avenue, N. E., Atlanta, Ga., is planning early erection of a new one-story ice-manufacturing plant, to cost about \$80,000 with machinery.

P. M. Clark, 10 Harmon Building, Lexington, N. C., is planning purchase of a gasoline hoist, mortar-mixers and kindred equipment.

## Buffalo

**B**UFFALO, Aug. 11.—Lackawanna Steel Construction Corporation, Walden Avenue, Buffalo, has filed plans for a one-story shop addition, and one-story storage and distributing unit, to cost over \$30,000 with equipment.

Niagara Body Corporation, Buffalo, has been formed with a capital of 100 shares of stock, no par value, to take over and expand Niagara Body Co., with local plant at 3070 Main Street. New organization will specialize in automobile and aircraft bodies. Officials include Glen A. Bassett and Walter E. Duerr, 7924 Rloppelle Street, Detroit, and George W. Pfohl, 44 Homer Avenue, Buffalo.

Lapp Insulator Co., Le Roy, N. Y., manufacturer of high-tension insulators, etc., has awarded general contract to H. K. Ferguson Co., Cleveland, for one-story addition, to cost about \$50,000 with equipment.

Keystone Chromium Co., 1095 Niagara Street, Buffalo, operating a general metal and chromium-plating works, has acquired a controlling interest in Parker Rustproof Co., 460 East Eagle Street, operating a metal-plating plant. Last noted works will be removed at once to Keystone plant, where increased capacity will be carried out. Harold M. Karet is general manager of Keystone organization.

St. Regis Paper Co., Watertown, N. Y., is considering plans for a new paper conversion mill at Seattle, initial unit to cost over \$200,000 with machinery. It is proposed to have mill ready for service before close of year.

International Nu-Tip Tool Corporation, Oswego, N. Y., care of Morris Berman, 1457 East Genesee Street, Syracuse, N. Y., recently formed by Mr. Berman and associates with capital of \$382,500, plans operation of local plant for manufacture of tools and other equipment. Benjamin E. Shove, Camillus, N. Y., will be an official of new company.

International Milling Co., 120 Childs Street, Buffalo, manufacturer of flour, etc., plans early call for bids for new storage and distributing plant, to cost over \$250,000 with equipment. W. J. Gordon, Minneapolis, is engineer. Headquarters of company are at Minneapolis.

Columbia Gas & Electric Co., Cincinnati, operating natural gas and electric properties, will build a pipe line from Dundee to Horseheads, N. Y., where connection will be made with main trunk system for natural gas distribution, to

cost about \$250,000. Company recently acquired Consumers Gas Co., Watkins Glen, N. Y.

Automatic Transportation Co., Inc., Buffalo, has removed its manufacturing operations from Buffalo to 101 West Eighty-seventh Street, Chicago, where a new plant has been completed. Part of its Buffalo plant will be retained for a sales and service branch.

## Cleveland

CLEVELAND, Aug. 11.—Garfield Tool & Die Co., Garfield, Ohio, is negotiating for purchase of plant and property of Salem Rubber Co., Salem, Ohio, and will remodel for new works. Present plant will be removed to Salem and capacity increased. Plans for reorganization of Garfield company are in progress.

W. S. Tyler Co., 3613 Superior Avenue, Cleveland, manufacturer of wire cloth, screens, etc., has awarded general contract to Aronberg-Freid Co., Terminal Tower, for a three-story and basement addition, 70 x 105 ft., to cost over \$125,000 with machinery. George S. Rider Co., Marshall Building, is architect and engineer.

City Council, Wellsville, Ohio, is planning complete electrification of municipal water pumping station, and will employ engineer to prepare plans and estimates of cost.

Citizens' Ice & Fuel Co., 201 Morris Street, Toledo, Ohio, is considering construction of two new artificial ice manufacturing plants, to cost over \$400,000 with machinery. Company is a subsidiary of Ice Service, Inc., Springfield, Ohio.

American Fork & Hoe Co., B. F. Keith Building, Cleveland, has awarded general contract to Rice-Jones Co., Union Building, for two-story addition to plant at Geneva, Ohio, 50 x 250 ft., to cost about \$85,000 with equipment.

Allied Oil Co., Guarantee Title Building, Cleveland, has work under way on a new oil storage and distributing plant on Whiskey Island, to cost over \$100,000 with equipment.

Reeke-Nash Motors Co., 6611 Euclid Avenue, Cleveland, local representative for Nash automobile, has leased building heretofore occupied by Willys-Overland Co., and will remodel for new service, repair and sales building, totaling about 100,000 sq. ft.

## Detroit

DETROIT, Aug. 11.—Detroit Edison Co., 2000 Second Avenue, Detroit, has authorized expansion and improvements at its Conners Creek steam-operated electric generating plant, including installation of new turbo-generator units and auxiliary machinery, reported to cost over \$15,000,000. Company engineering department is in charge.

Iron Mountain Cylindrical Grinding & Machine Co., Iron Mountain, has work under way on an addition to cost about \$25,000, and plans early installation of equipment.

Kelsey-Hayes Wheel Corporation, 3600 Military Avenue, Detroit, is arranging a note issue of \$7,500,000, part of fund to be used for general expansion, including payment for plant and business of Jaxon Steel Products Co., Jackson, manufacturer of steel rims and wheels, steel stampings, etc., to be operated as a subsidiary. Acquiring company is developing an output at all plants of over 50,000 automobile wheels a day, and in addition to five factories in Detroit district, is

operating plants at Buffalo, Memphis, Tenn., and Windsor, Ont.

Seneca Copper Co., Calumet, is contemplating expansion and betterments at No. 1 shaft, including construction of new rock house, with installation of hoisting machinery, air compressors, conveying and other mechanical equipment.

Federal-Mogul Corporation, 11031 Shoemaker Street, Detroit, manufacturer of bushings, bearings, castings, etc., has acquired plant and business of Watkins Mfg. Co., Detroit, manufacturer of automobile specialties, operating a chain of shops for reabbating connecting rods for automobiles and kindred service. Acquiring company will consolidate and plans expansion.

Mayes Brothers Tool & Mfg. Co., Port Huron, has work under way on a one-story addition, and plans early installation of equipment for increased output.

Board of Education, Grand Rapids, is considering installation of manual training equipment in three-story and basement addition to Ottawa Hills high school, to cost about \$225,000, for which superstructure will be placed under way at once.

Allen Air Turbine Ventilator Co., 1040 Fourteenth Street, Detroit, manufacturer of ventilating equipment, has changed its name to Allen Corporation.

Charles P. Limbert Furniture Co., Holland, has begun construction of new one-story plant, 100 x 1000 ft., at Laurel, Miss., to cost over \$200,000 with equipment.

## Milwaukee

MILWAUKEE, Aug. 11.—While inquiry for machine tools appears to have improved slightly, the volume of business being booked is sharply restricted. Urgent needs only are being filled, although some manufacturers are taking advantage of slack production to modernize plant layouts.

Bump Mfg. Co., La Crosse, Wis., organized with \$200,000 capital, has taken over plant and business of Bump Paper Fastener Co., 1830 West Avenue South. New company will continue production of clipless paper fasteners and will also install equipment for manufacture of a new type of pump designed by George P. Bump for transferring liquids under pressure, for air drills, vacuum pumps for dehydrating and packing plants, farm water pumping plants and similar uses. W. J. Ferris is president of new company.

Wisconsin Radiator Furniture Co., Mayville, Wis., manufacturer of ornamental metal grilles, radiator enclosures and other perforated metal specialties, is completing an addition, increasing working floor space to 24,000 sq. ft. Metal department is now housed in two shops, 48 x 175 ft., and 40 x 80 ft.; paint and enamel shop has been enlarged to 60 x 100 ft., and warehouse and shipping room to 60 x 80 ft.

Common Council, Spooner, Wis., has authorized commissioner of public works to proceed with plans for replacing present steam engine unit in city water and light plant with Diesel unit. Purchase is to be made before end of year. George B. Sage is city clerk.

Beaver Dam Pattern Co., Beaver Dam, Wis., has moved to its new shop on Rowell Street and is installing additional facilities to increase capacity about 150 per cent, and make possible production of wood and metal patterns in larger sizes.

Common Council of Fond du Lac, Wis., is taking bids until Aug. 27 for following equipment for municipal waterworks plant: Two 3,000,000-gal. electrical drive pumps; one 10-in. deep well turbine, capacity 1100 to 1400 gal. per min.; one 500,000-gal. elevated steel storage tank, and complete electrical control apparatus. Alvord, Burdick & Howson, 8 South Dearborn Street, Chicago, are consulting engineers. C. J. Fay is city clerk.

General contract for a workshop, 100 ft. sq., one story, as addition to State Teachers' College at River Falls, Wis., has been placed with Frank Luberg & Son, River Falls. Plans are by Arthur Peabody, State architect, Madison, Wis.

Board of Vocational Education, Waukesha, Wis., has accepted bid of Joseph Lorenz, 2326 Vliet Street, Milwaukee, for first unit of Waukesha Vocational School, to cost \$85,000. Architect is Hugo C. Haeuser, 445 Milwaukee Street, Milwaukee. G. O. Banting is secretary of board.

## Chicago

CHICAGO, Aug. 11.—Sales of machine tools so far in August have been few, with orders and inquiries mostly for single items. Demand for used tools also is dull.

A local company has ordered a 96-in. boring mill and the Milwaukee Road has released several car shop tools, orders for which were placed several months ago. The Burlington has not yet closed on four or five items on which prices were taken last week. Chicago Board of Education will buy for the Mosley school a ½-in. drilling machine, an 18-in. band saw, three motor-in-head lathes, an oil stone tool grinder and a 6-in. jointer.

Illinois Malleable Iron Co., 1801 Diversey Avenue, Chicago, plans rebuilding part of plant recently destroyed by fire.

Vortex Mfg. Co., 421 North Western Avenue, Chicago, manufacturer of paper cups and containers, has begun superstructure for four-story addition, to cost about \$400,000 with machinery.

Iowa Public Service Co., Commercial Street and West Park Avenue, Waterloo, Iowa, has plans for a one-story and basement addition to steam-operated electric power plant at Charles City, Iowa, to cost about \$75,000 with equipment. G. V. Lonacker is supervising engineer, address noted.

United States Gypsum Co., 300 West Adams Street, Chicago, has approved plans for construction of a new mill for its subsidiary, Canadian Gypsum Co., Ltd., at Hillsborough, N. B., including power house, machine shop and other buildings, to cost over \$500,000 with equipment.

Board of Education, City Hall, Minneapolis, is planning installation of manual training equipment in new three-story and basement high school, to cost over \$1,000,000, for which it is expected to ask bids on general contract in fall. Bureau of Buildings, Division of Design, City Hall, is architect and engineer.

Northern Pacific Railroad Co., Railroad Building, St. Paul, Minn., has work under way on one-story addition to machine shop at Glendive, Mont., for which general contract recently was let to Carl Steen, Grand Forks, N. D., to cost about \$35,000 with equipment. O. M. Rognan, address noted, is company engineer.

Oliver Power Co., Paonia, Colo., has plans for a new steam-operated electric power house near its Olive coal mine, to



cost about \$250,000 with transmission system.

Erickson Co., Alworth Building, Duluth, Minn., architect, has plans for two-story automobile service, repair and garage building, 100 x 140 ft., to cost about \$100,000 with equipment.

Johnson Motor Co., Waukegan, Ill., manufacturer of outboard gasoline motors, has arranged for a stock issue to total \$591,000, part of fund to be used for expansion.

North Star Granite Co., St. Cloud, Minn., has acquired about 80 acres of quarry lands at Mellen, Wis., and plans early development, including installation of quarrying machinery, hoisting, conveying, loading and other equipment.

## Pittsburgh

**P**ITTSBURGH, Aug. 11.—Business so far this month is even more quiet than in July, although dealers are succeeding in developing a few orders through sales engineering work. New inquiry is almost entirely lacking, and most of the current business is coming from improvement and betterment programs. The railroads are not in the market, and many other industries, such as the structural steel fabricating, which are ordinarily consistent buyers of tools, are inactive. Plant suspensions are bringing out a small amount of replacement business, but companies in general who have closed down temporarily because of lack of orders are doing little buying.

Beckwith Machinery Co., 500 Arch Street, Pittsburgh, representative for Caterpillar tractors, farm implements, etc., has awarded general contract to Austin Co. for a one and two-story service, repair and sales building, 104 x 116 ft., at East Liberty, to cost about \$150,000 with equipment, which will include an overhead traveling crane and other mechanical-handling apparatus.

Capstan Glass Co., Connellsville, Pa., has authorized construction of a steam power plant, and storage and distributing building, to cost about \$150,000 with equipment.

Hammermill Paper Co., East Lake Road, Erie, Pa., has awarded general contract to Platt Co., Palace Hardware Building, for one-story finishing department, to cost about \$70,000 with machinery.

Appalachian Electric Power Co., Bluefield, W. Va., has applied for permission to construct two hydroelectric power projects in southern part of State, including a development at Bull Falls, about eight miles from Hinton and second station near Hinton, entire project to cost close to \$20,000,000 including steel tower transmission lines, substations, etc.

## St. Louis

**S**T. LOUIS, Aug. 11.—Board of Education, 911 Locust Avenue, St. Louis, has filed plans for a one-story and basement power plant on School Street, 70 x 150 ft., to cost close to \$305,000 with equipment.

State Board of Agriculture, State House, Oklahoma City, Okla., has awarded general contract to Kreipke Construction Co., 708 West Grand Avenue, Oklahoma City, for one-story mechanical building at institution at Goodwell, Okla., to cost about \$25,000 with

equipment. Layton, Hicks & Forsyth, Braniff Building, Oklahoma City, are architects.

Bale Chevrolet Co., 411 West Capitol Street, Little Rock, Ark., local representative for Chevrolet automobile, has awarded general contract to Fred Parrot, 2405 Battery Street, for one-story service, repair and garage building, 140 x 200 ft., to cost over \$150,000 with equipment. Wittenbert & Delony, Home Life Building, are architects.

Marquette Cement Mfg. Co., 317 North Eleventh Street, St. Louis, with headquarters in Marquette Building, Chicago, has awarded general contract to A. D. Gates Construction Co., Chemical Building, for extensions and improvements in local storage and distributing plant, to cost about \$80,000 with equipment.

Lincoln Metal Products Co., Lincoln, Neb., recently organized, will operate a plant for production of babbit metals, solder and kindred products, initial works to represent an investment of over \$50,000. Production will soon begin.

Ozark Reduction Co., Little Rock, Ark., care of Gordon N. Peavy, Little Rock, president, has applied for permission to construct a hydroelectric generating plant on Buffalo River at Carver, near Jasper, Ark., with ultimate capacity of about 500,000 hp., to cost over \$1,000,000 with transmission system. F. E. Hatch is consulting engineer.

Salina Terminal Elevator Co., Salina, Kan., has plans for an addition to grain elevator to double present capacity of 500,000 bu., to include installation of elevating, screening and other equipment, to cost over \$150,000. Chalmers & Barton, Pioneer Trust Building, Kansas City, Mo., are engineers.

John Y. Garlington, 729 Culbertson Drive, Oklahoma City, Okla., and associates are organizing Oklahoma Straw Board Mills, to construct and operate a local plant for production of strawboard from cornstalks and wheat straw. Company will soon engage engineer to prepare plans and will be in market for machinery. Initial unit will cost over \$75,000.

## Cincinnati

**C**INCINNATI, Aug. 11.—Machine tool demand is dull and in many instances manufacturers are having difficulty maintaining operations at the present rate of about 40 per cent. Shop forces in some plants are being reduced in an effort to curtail expenses. Inquiry has not increased, although manufacturers state that more requests for special machinery have been received than in normal conditions.

West Virginia Coal & Coke Corporation, Atlas Bank Building, Cincinnati, is considering construction of a new water and rail terminal for coal at foot of Mills Street and Ohio River, with capacity of 5000 tons per day, to cost about \$450,000. Company engineering department will be in charge.

Contracting Officer, Wright Field, Dayton, Ohio, is asking bids until Aug. 20 for nuts, tees, elbows, nipples and kindred mechanical supplies.

Brown-Brockmeyer Co., 10 Norwood Avenue, Dayton, Ohio, manufacturer of fractional horsepower motors, parts, etc., has asked bids on general contract for a new one-story plant, 80 x 500 ft., to cost over \$200,000 with equipment.

Louisville Railroad Co., Louisville, plans

rebuilding of coach shop recently damaged by fire.

Guffey & Dew Mfg. Co., Somerset, Ky., recently organized, will operate a local plant for production of metal flower stands and other metal products.

Standard Pattern Works, 1208 Queen City Avenue, Cincinnati, manufacturer of metal and wood patterns, etc., has asked bids on general contract for a one-story addition, to cost about \$25,000 with equipment. Howard McClorey, Bank of Commerce Building, is architect.

Memphis Power & Light Co., Memphis, Tenn., is planning to rebuild part of main steam-operated electric generating plant, recently destroyed by fire.

Board of Education, Chillicothe, Ohio, plans installation of manual training equipment in new three-story high school, to cost about \$400,000, for which general contract has been let to J. F. Hardyman Co., Maysville, Ky. Garber & Woodward, 4 West Seventh Street, Cincinnati, are architects.

National Consumers Oil Co., Inc., Terre Haute, Ind., is considering an oil storage and distributing plant at Louisville, to cost over \$150,000 with equipment.

City Council, Columbus, Ohio, is contemplating erection of a municipal electric light and power plant to cost close to \$150,000 with machinery. It is also proposed to construct an automobile service, repair and garage building for municipal motor trucks and cars. William Pettit, Columbus, is architect for both structures.

## Gulf States

**B**IRMINGHAM, Aug. 11.—Lamson & Sessions Bolt Co., 3103 Twenty-seventh Avenue, North, Birmingham, has awarded general contract to Johnson Construction Co., 512 North Sixth Street, for one-story addition, 60 x 180 ft., primarily for storage and distribution, to cost over \$40,000 with equipment. Headquarters are at 1971 West Eighth-fifth Street, Cleveland. George S. Rider Co., Marshall Building, Cleveland, is architect and engineer.

Alabama Coca-Cola Bottling Co., 1010 Gurnee Street, Anniston, Ala., plans installation of automatic bottling machinery, conveying and elevating equipment in new two-story and basement bottling plant, to cost about \$85,000. Pringle & Smith, Norris Building, Atlanta, Ga., are architects.

Continental Can Co., 1 Pershing Square, New York, is establishing a new branch plant at Jacksonville, Fla., where 30 acres of land and buildings were recently acquired. Factory will cost over \$100,000 with equipment.

Wade-Dobbs Wagon Works, Clarksdale, Miss., manufacturer of wagons, automobile bodies, etc., plans rebuilding part of plant recently destroyed by fire.

Southwest Food & Refrigerating Co., Pampa, Tex., is planning construction of a new ice-manufacturing and cold storage plant, to cost over \$100,000 with machinery.

East Baton Rouge Police Jury, East Baton Rouge, La., has awarded general contract to A. C. Stewart, Baton Rouge, for two-story hangar, 100 x 120 ft., repair shop and other field units for municipal airport, to cost over \$65,000 with equipment. Jones, Roessle, Olschner & Weiner, Maison Blanche Building, New Orleans, are architects.

P. J. Williams Industries, Inc., Raymondville, Tex., recently organized by

P. J. Williams and associates, plans operation of local works for manufacture of cotton ginning equipment, cotton compresses, etc., including parts production and assembling.

Saxet Oil Co., Houston, Tex., has acquired oil properties of Houtex Production Co., North Dayton, Liberty County, and plans development in that district, including pipe lines, storage and distributing facilities, etc.

Florida Food Corporation, St. Petersburg, Fla., has plans for a one-story cold storage and refrigerating plant, to cost about \$50,000 with machinery. Charles L. Harvey is one of heads of company, in charge.

West Texas Utilities Co., Abilene, Tex., has acquired municipal electric light and power plant and waterworks at Texline, Tex., and will operate for central station service. Plans are under way for extensions and installation of additional equipment.

DeBardeleben Coal Corporation, 2201 First Avenue, Birmingham, is carrying out expansion and improvements at Hull, Walker County, and vicinity, to cost over \$300,000. Work will include construction of new tipples, coal washer and other units.

City Commission, Lubbock, Tex., has awarded general contract to W. G. McMillan, Myrick Building, for one-story hangar, 85 x 120 ft., with shop and repair facilities at municipal airport, to cost about \$30,000 including equipment.

Roy Westbrook, Thrall, Tex., and associates have plans for a new oil refinery on local site, to cost over \$150,000 with machinery.

E. J. Hoffman Mfg. & Development Co., Chamber of Commerce, Galveston, Tex., E. J. Hoffman, president, has asked bids on general contract for a new plant, one-story, 50 x 200 ft., for manufacture of automobile equipment, including headlights, air pumps, etc., as well as similar accessories for aircraft service. A list of equipment to be installed has been arranged.

## Indiana

INDIANAPOLIS, Aug. 11.—Board of Trustees, Purdue University, Lafayette, has awarded general contract to A. E. Kemmer, Third and Brown Streets, for three-story and basement electrical engineering building, to be known as Thomas Duncan Memorial, to cost over \$100,000 with equipment. Walter Scholer, Wallace Building, is architect.

Williams Brothers Foundry Co., Elkhart, has arranged for purchase of plant and business of Stanley Foundry Co., Grand Rapids, Mich., and will operate as a branch plant for production of builders' hardware, furniture hardware, etc., as well as brass, bronze and aluminum castings. Elkhart works will be maintained as heretofore, specializing in manufacture of parts for musical instruments, metal castings, etc.

Coca-Cola Bottling Co., 858 Massachusetts Avenue, Indianapolis, will install automatic bottling and capping machinery, conveying, elevating and other equipment in new two-story and basement bottling plant, 100 x 200 ft., to cost over \$85,000, for which general contract has been let to William P. Yunglaus Co., 825 Massachusetts Avenue.

Farm Tools, Inc., Evansville, has been organized with a capital of \$4,000,000 to take over and consolidate a number of companies manufacturing agricultural tools and equipment, including Vulcan Plow Co., with local plant; Roderick Lean

Co., Mansfield, Ohio, with branch plant at Evansville; South Bend Chilled Plow Co., South Bend and Evansville; Hayes Pump & Planter Co., Galva, Ill., and Peoria Drill & Seeder Co., Peoria, Ill. It is proposed to continue present plants in operation, with concentration of production at different Evansville units. Headquarters will be maintained at last noted place. Richard Rosencranz, president of Vulcan company, will be chairman of board of consolidated organization. C. A. Hines, previously treasurer and general manager of Vulcan company, will be president.

City Council, Goshen, is considering construction of a new municipal electric light and power plant, using Diesel engine units as prime movers, to cost about \$200,000 with equipment.

## Pacific Coast

SAN FRANCISCO, Aug. 7.—Los Angeles Can Co., Los Angeles, has plans for a two-story addition to plant at 3852 Union Pacific Avenue, 180 x 220 ft., to cost about \$200,000 with equipment. An overhead trolley system will be installed. Francisco & Jacobus, Pershing Square Building, are architects and engineers.

Watsonville Airport Co., Watsonville, Cal., has plans for a one-story hangar, 80 x 100 ft., with shop and repair facilities, at municipal airport, and will begin superstructure soon. A. W. Story, Pajaro Valley Bank Building, is architect.

Electrical District No. 4, Casa Grande, Ariz., has approved construction of a steel tower transmission line in Eloy and Toltec districts, about 60 miles, to cost about \$250,000 with substation and switching facilities.

Apple Growers' Cold Storage Co., Watsonville, Cal., will soon begin superstructure for a one-story addition to cold storage and refrigerating plant 75 x 100 ft., to cost about \$75,000 with machinery.

Armstrong Mfg. Co., 2 Second Street, Portland, Ore., has plans for a one-story machine shop, 45 x 130 ft., to cost about \$30,000 with equipment.

Crescent Machine Works, Monroe and Mallon Streets, Spokane, Wash., is contemplating an addition to plant to cost over \$35,000 with machinery.

W. J. Voit Rubber Co., Los Angeles, has awarded general contract to Industrial Building Co., 6624 Stanford Avenue, for two-story plant, 50 x 112 ft., to cost about \$40,000 with equipment.

Nu-way Casting Co., Council Bluffs, Iowa, represented on Pacific Coast by A. L. Davies, Sovereign Apartments, Long Beach, Cal., is considering establishment of a new foundry early in fall near Long Beach, to cost over \$40,000 with equipment.

Ovens, power equipment, conveying and other machinery will be installed in new one and two-story plant, 100 x 100 ft., to be erected by William Shredded Wheat Co., 525 Market Street, San Francisco, near Belmont, to cost about \$100,000 with equipment. Walter Falch, Hearst Building, is architect.

Southern Counties Gas Co., Pomona, Cal., is contemplating a one-story equipment storage and distributing plant, 40 x 150 ft., to cost about \$30,000 with equipment. Company engineering department is in charge.

City Trustees, Pendleton, Ore., is considering establishment of a municipal airport, including hangar, repair and reconditioning shop and other field units. An appropriation will be arranged soon.

Pendleton Chamber of Commerce is interested in project.

Union Foundry, Inc., Bellingham, Wash., care of John A. Kellogg, Bellingham, attorney, recently organized by local interests, is planning operation of foundry for production of iron and other metal castings. J. C. Borchardt and Edward McFarland, Bellingham, head new company.

## Canada

TORONTO, Aug. 11.—Canadian Lamp & Stamping Co., East Windsor, Ont., has started excavation work for a new plant.

George W. Reed & Co., Ltd., 779 St. Antoine Street, Montreal, has let general contract to Church Ross Co., Ltd., 1440 St. Catharine Street, West, for a new plant to cost \$400,000. Some equipment will be purchased. T. Pringle & Sons, Ltd., 410 St. Nicholas Street, are engineers.

Bids are being received for a two-story addition to plant of N. A. Armstrong Co., Ltd., 7 King Street East, Toronto, 80 x 241 ft.

Barnett-McQueen Construction Co., Ltd., Port Arthur, Ont., has general contract for an addition to grain elevator at Fort William, Ont., for Searle Grain Co., Ltd., to cost \$400,000.

Thompson Products Co., 2196 Clarkwood Road, Cleveland, has awarded contract for a factory at St. Catharines, Ont., to cost \$40,000. Local office is at 136 St. Paul Street.

Niagara Falls Water Commission, Niagara Falls, Ont., has awarded excavation contract to D. G. Bawtenheimer, 2 Clifton Street, for a power house and filtration plant at Chippawa, to cost \$500,000. H. G. Acres & Co., Ltd., is engineer.

Canadian National Railways have awarded general contract to St. George Construction Co., Ltd., 4820 Fourth Avenue, Rosemont, for a foundry and pattern shop at Point St. Charles, Que. C. B. Brown is engineer.

Richardson & Sons, Ltd., Winnipeg, has awarded contract to Barnett-McQueen Construction Co., Ltd., Port Arthur, Ont., for a \$750,000 addition to grain elevator at Port Arthur.

## Foreign

A CONCESSION has been granted British Eagle Oil Co., London, England, by Government of Mexico, for construction of a pipe line for crude oil transportation from Furbero Oilfield, on Gulf Coast of Vera Cruz, where company is operating properties, to Mexico City, about 140 miles. It is proposed to construct an oil refinery at last-noted place, entire project to cost over \$1,500,000 with equipment. Work will begin within 60 days.

Central Catalina Sugar Co., Cruces, Cuba, is considering rebuilding part of cane sugar mill and other units recently destroyed by fire, with loss close to \$1,000,000 including equipment.

Plans are under way for a new meat-packing plant at Nogales, Sonora, Mexico, to include installation of conveying and other mechanical-handling equipment, cold storage and refrigerating facilities, etc. Further information at office of Bureau of Foreign and Domestic Commerce, Washington, D. C., reference Mexico 1239.

Proyectos y Construcciones de Madrid, Madrid, Spain, has secured a concession



from Municipal Government, Buenos Aires, Argentina, for construction of four lines of underground railroads in city, entire project to cost about 300,000,000 pesos (\$114,000,000).

Aluminum Industrie A. G., Neyhausen, Germany, has arranged for a bond issue to total about \$4,750,000, considerable part of fund to be used for extensions and improvements in plant, including installation of machinery.

Burbach Kaliwerke A. G., Frankfort-on-Main, Germany, manufacturer of pot-

ash products, chemicals, etc., has arranged for purchase of Kiehlmann-Voelker Machine Works, Bernburg, Germany, manufacturer of machinery for metallurgical and chemical industries, and will operate as a subsidiary. Plans are under way for expansion and betterments in acquired property.

La Fontainoise (Societe Anonyme pour la Fabrication des Pointes, Clous et Vis), Fontaine l'Eveque pres Charleroi, Belgium, desires addresses of American companies making nail machines.

of 60 pages devoted to descriptions of oil electric locomotives and rail cars, selection of equipment for same, general description of oil electric power plants and other pertinent data. A comprehensive analysis of economies claimed for oil electric locomotives and rail cars is presented, with comparative cost of operation figures.

**Chain Belt Conveyor Furnace.**—Electric Furnace Co., Salem, Ohio. Eight-page bulletin, with 16 illustrations, describing new gas and electric chain belt conveyor furnace used for heat-treating miscellaneous small and medium size parts and products without pans or trays.

## New Trade Publications

**Drop Forged Chain.**—Transue & Williams Steel Forging Corporation, Alliance, Ohio. Bulletin of eight pages, illustrating installations of T. & W. drop forged chain. Some of the special features claimed for this product are pitch accuracy, high breaking strain, well balanced design, etc.

**Lubricating Systems.**—Hodson Corporation, 5301 West Sixty-sixth Street, Chicago. Bulletin of 12 pages, illustrated, devoted to the Adams-Schuette lubricating system, which is said to be a most efficient and simple system for automatic lubrication of mill equipment.

**Ash Conveyor System.**—United Conveyor Corporation, Old Colony Building, Chicago. Catalog of 16 pages, describing the Steamatic pneumatic ash conveyor system, which consists of a group of small, Monel metal, steam nozzles directed in the line of air flow, yet fully protected from abrasion from the material conveyed. Illustrations of installations are shown.

**Unit Pulverizer.**—Whiting Corporation, Harvey, Ill. Bulletin 10 of four pages illustrates and describes No. 3 unit fuel pulverizer, equipped with high-low velocity burner, which is said to be especially adaptable to industrial furnace and small boiler firing.

**Fuel-Fired Furnace.**—Electric Furnace Co., Salem, Ohio. Eight-page bulletin, with illustrations, describing oil and gas-fired continuous and batch type billet heating, forging and car type furnaces for heating, normalizing and heat treating. The booklet also contains information on labor-saving materials handling equipment.

**Industrial Burners.**—Gilbert & Barker Mfg. Co., Springfield, Mass. Eight-page folder describing and illustrating low pressure fuel oil burners which may be used for applying heat to practically all industrial processes.

**Steel Shelving.**—Universal Fixture Corporation, 125 West Twenty-third Street, New York. Folder illustrating various types of steel shelving and steel cabinets for storage and stock purposes.

**Protective Paints.**—Semet-Solvay Co., 61 Broadway, New York. This 12-page booklet illustrated with sketches in color, depicts the uses for which various protective paints are intended. It describes the qualities of paints for hot surfaces up to 740 deg. Fahr., acid resistants for alkali dust and acid fumes, roof protection, coating for submerged and embedded iron and steel, exterior metal protection and for waterproofing brick, concrete and tile. Included is a table showing the number of square feet per gallon,

which may be covered with the various grades of protective paints, ranging from 80 sq. ft. per gal. with roof coating to 550 sq. ft. per gal. with graphite, structural steel and shop paints.

**Rubber-Coated Steel.**—American Hard Rubber Co., 11 Mercer Street, New York. This new 54-page catalog of rubber-coated steel equipment and solid rubber fixtures includes the enlarged line of products being made with vulcanized rubber. It is replete with illustrations and specifications of rubber-coated steel tanks, tank cars pipe and fittings and pumps. Solid rubber pumps and such utensils as palls, dippers, measures, bottles, dipping baskets and funnels are included. In a discussion of the resistance of rubber to acids, 27 are listed and in addition sulphuric acid up to 50 deg. Fahr., nitric acid up to 16 deg. Fahr. and phosphoric acid up to 75 per cent strength. In fact, the chief acids which attack rubber linings are the solvents of rubber, such as ether, benzol, acetone and aniline.

**Cement Tiles.**—Federal Cement Tile Co., 608 South Dearborn Street, Chicago. A bulletin illustrating some of the uses for the company's "Feather-weight" concrete slabs. The benefits of light weight and insulation for roofing and other purposes are pointed out, these qualities being obtained from the trapped air cell structure of the concrete, which results in weights as low as 10 lb. per sq. ft.

**Galvanized Sheets.**—Superior Sheet Steel Co., division of Continental Steel Corporation, Canton, Ohio. This 24-page booklet describes the qualities of "Galvannealed" steel sheets made with copper bearing steel, coated with zinc, and specially heat treated under a patented process. It is claimed that during the special heat treatment certain qualities of a spangled galvanized sheet, which are detrimental to the adhesion of paints and lacquers, are destroyed. These sheets do not peel, are soft and ductile, and are not affected by the heat developed in stoves and ordinary heating furnaces. Included in the booklet are numerous illustrations of products in which "Galvannealed" sheets are being used.

**Mine and Industrial Locomotives.**—Westinghouse Electric & Mfg. Co., East Pittsburgh. Special publication No. 1873, containing photographs, drawings and data covering electric and mechanical construction of 17 mine locomotives and seven industrial locomotives, recently built by the Westinghouse company.

**Oil Electric Locomotives.**—Westinghouse Electric & Mfg. Co., East Pittsburgh. Special publication No. 1880

## Coming Meetings

### August

**Conference on Human Relations in Industry.** Aug. 27 to 31. Thirteenth annual meeting under auspices of Y. M. C. A., Silver Bay, Lake George, N. Y. E. H. T. Foster, 347 Madison Avenue, New York, secretary.

### September

**Institute of Metals (British).** Sept. 9 to 12. Fall meeting, Southampton, England. G. Shaw Scott, 36 Victoria Street, London, S. W. 1, England, secretary.

**Iron and Steel Institute (British).** Sept. 15 to 20. Fall meeting, Prague, Czechoslovakia. George C. Lloyd, 28 Victoria Street, London, S. W. 1, England, secretary.

**National Machine Tool Builders' Association.** Sept. 22 and 23. Second cost conference, Hotel Clifton, Niagara Falls, Ont. Ernest F. DuBrul, 617 Vine Street, Cincinnati, general manager.

**American Society for Steel Treating.** Sept. 22 and 26. National metal congress and exposition, Stevens Hotel, Chicago. W. H. Eisenman, 7016 Euclid Avenue, Cleveland, secretary.

**American Society of Mechanical Engineers.** Sept. 22 to 24, Machine Shop Practice Division; Sept. 24 to 26, Iron and Steel Division, Stevens Hotel, Chicago. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

**American Institute of Mining and Metallurgical Engineers.** Sept. 22 to 26. Fall meeting of Institute of Metals Division and Iron and Steel Division, Stevens Hotel, Chicago. H. Foster Bain, 29 West Thirty-ninth Street, New York, secretary.

**American Welding Society.** Sept. 22 to 26. Fall meeting, Congress Hotel, Chicago. W. M. Spraragen, 29 West Thirty-ninth Street, New York, technical secretary.

**American Electrochemical Society.** Sept. 25 to 27. Fall meeting, Statler Hotel, Detroit. Colin G. Fink, Columbia University, New York, secretary.

**American Gear Manufacturers' Association.** Sept. 29 to Oct. 1. Fall meeting, Hotel Clifton, Niagara Falls, Ont. T. W. Owen, 3608 Euclid Avenue, Cleveland, secretary.

**National Safety Council.** Sept. 29 to Oct. 3. Nineteenth annual meeting, Fort Pitt and William Penn Hotels, Pittsburgh. Metals section Tuesday and Wednesday mornings and Thursday afternoon. W. H. Cameron, 108 East Ohio Street, Chicago, managing director.

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